TRANSACTIONS

AMERICAN ACADEMY
of
OPHTHALMOLOGY
and
OTOLARYNGOLOGY

SEPTEMBER - OCTOBER
1954

Volume 58 Number 5

ANNUAL MEETING, OCTOBER 9-14, 1955, CHICAGO

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TRANSACTIONS

American Academy of Ophthalmology and Otolaryngology

VOLUME 58 SEPTEMBER - OCTOBER, 1954 NUMBER 5

TABLE OF CONTENTS

PAGE

AMERICAN MEDICAL CENTERS: THEIR ROLE IN EDUCATION 657
Address of the President
WALTER H. THEOBALD, M.D., Chicago, Ill.

ONE HUNDRED YEARS OF LARYNGOSCOPY: TO THE MEMORY OF GARCIA, TUERCK AND CZERMAK 663
FRIEDRICH S. BRODNITZ, M.D., New York, N. Y.

SYMPOSIUM: MEDICAL MANAGEMENT OF CHRONIC OTIC SKIN INFECTIONS

RATIONALE OF THERAPY 671
BEN H. SENTURIA, M.D., St. Louis, Mo.

LABORATORY DIAGNOSIS 678
H. RUSSELL FISHER, M.D., Los Angeles, Calif., by invitation

THERAPEUTIC RESULTS 686
EDMUND P. FOWLER, JR., M.D., and
RICHARD FREEMAN, M.D., by invitation, New York, N. Y.

SUMMARY 693
FRANCIS W. DAVISON, M.D., Danville, Pa.

SYMPOSIUM: MEDICAL MANAGEMENT OF DIZZINESS

THE IMPORTANCE OF ACCURATE DIAGNOSIS 695
DAVID D. DEWEESE, M.D., Portland, Ore.

THE INTERNIST'S APPROACH 698
LAURENCE SELLING, M.D., Portland, Ore., by invitation

PHARMACOLOGY 705
ELTON L. MCCAWLEY, PH.D., Portland, Ore., by invitation

DIFFERENTIATION AND TREATMENT OF ECZEMAS OF THE EYELIDS 708
FREDERICK H. THEODORE, M.D., New York, N. Y.

STERILIZATION OF SHARP INSTRUMENTS BY BOILING, WITH UTILIZATION OF CATHODIC PROTECTION TO PREVENT CORROSION 724
WILLIAM H. HAVENER, M.D., and
C. A. SIEBERT, PH.D., Ann Arbor, Mich., by invitation

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TABLE OF CONTENTS *(Continued)*

PAGE

Repair of the Facial Nerve After Facial Lacerations 733
James H. Maxwell, M.D., Ann Arbor, Mich.

The Deviated Nose and Septum: A Panel Discussion 741
John Marquis Converse, M.D., *Moderator,* New York,
Edgar M. Holmes, M.D., Boston, Mass., and
William C. Huffman, M.D., Iowa City, Iowa

NEW INSTRUMENTS

Method of Estimating Visual Acuity in a Young Child 750
Walter H. Fink, M.D., Minneapolis, Minn.

Description of the Chamlin Perimeter 751
Max Chamlin, M.D., New York, N. Y.

A Modified Erisophake 753
Albert C. Esposito, M.D., Huntington, W. Va.

Enucleation Neurotome 754
Ray Tully Bradford, M.D., Chicago, Ill., by invitation

An Isothermal Controlled Pressure Irrigation Apparatus 756
Victor Goodhill, M.D., Los Angeles, Calif.

In Memoriam 758

Highlights of the Fifty-Ninth Annual Meeting 759

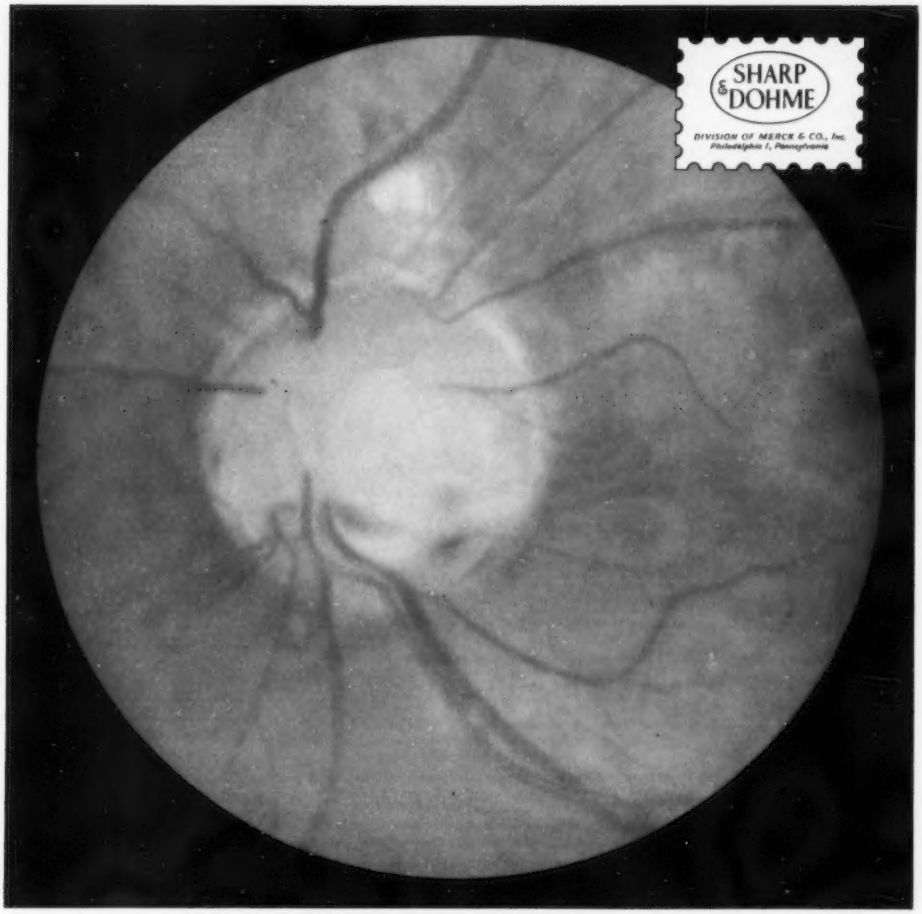
Screening School Children for Visual Defects 761

Necrology — Deaths Reported from Oct. 1, 1953 to Sept. 1, 1954 762

Teachers' Section in Otolaryngology 779

News Notes XXVII

Positions Available XXX



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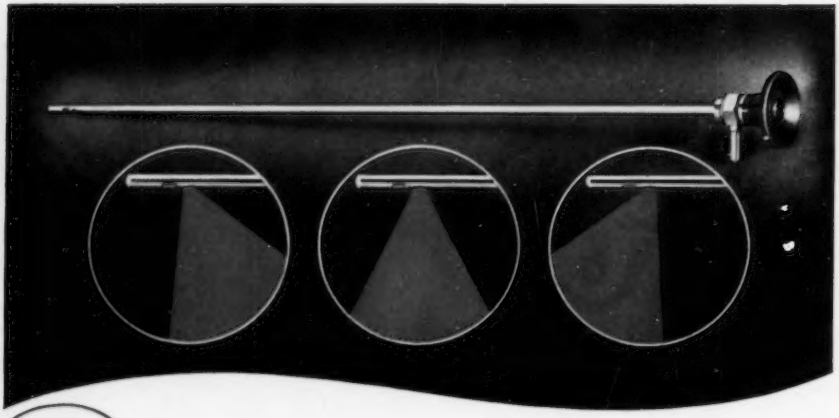

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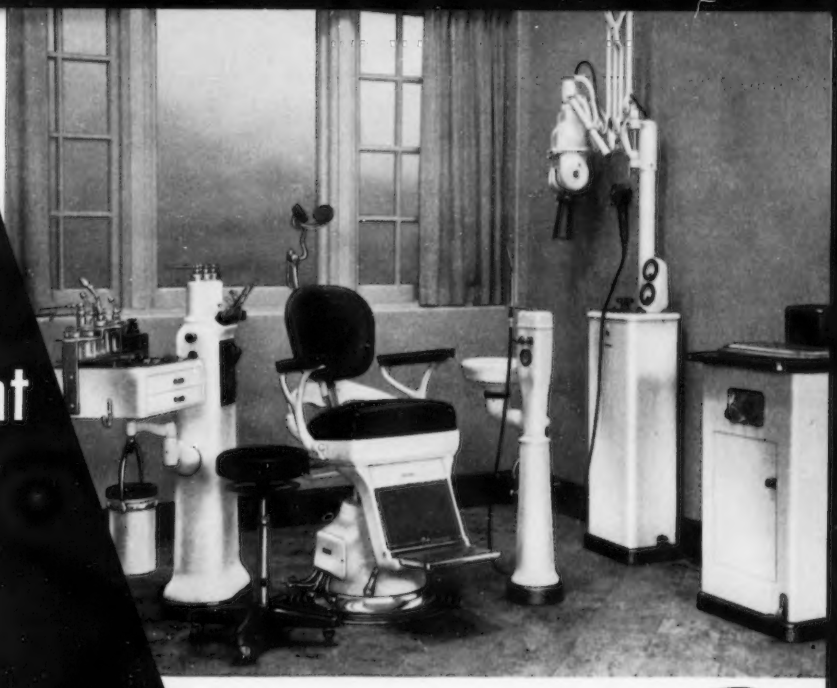

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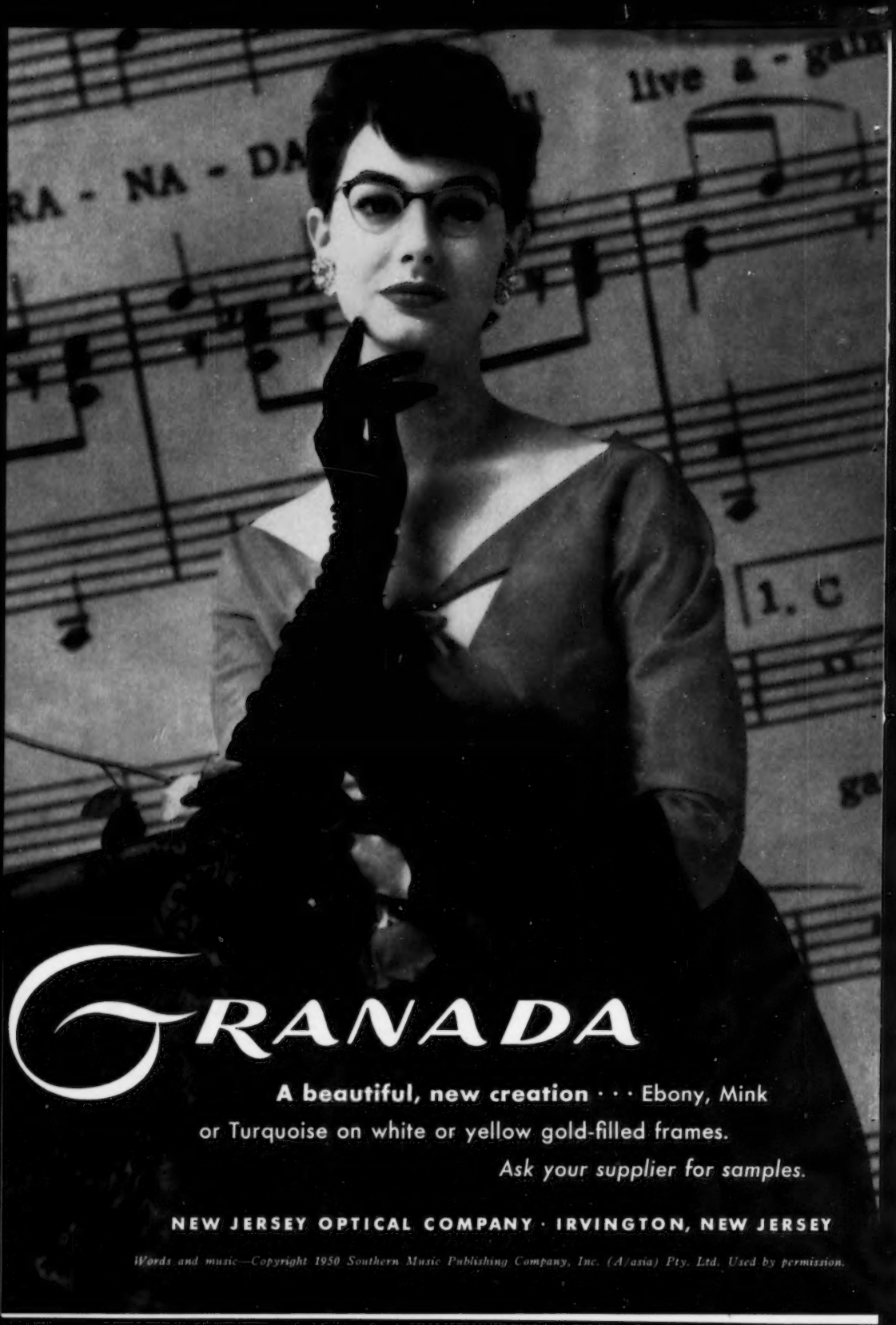
MODEL MA, TYPE 2 with swinging cuspidor at left of chair

MODEL MB, TYPE 2 with surgical cuspidor at right of chair



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by

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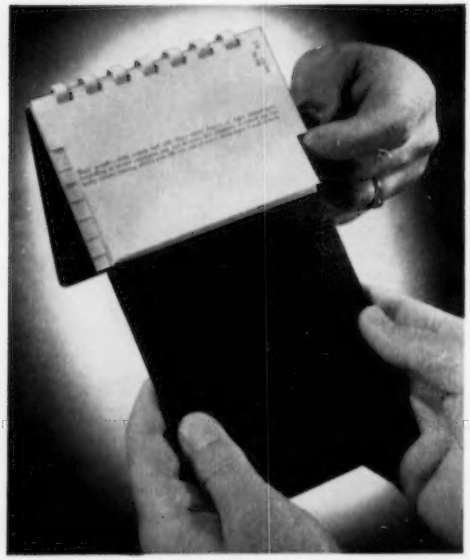

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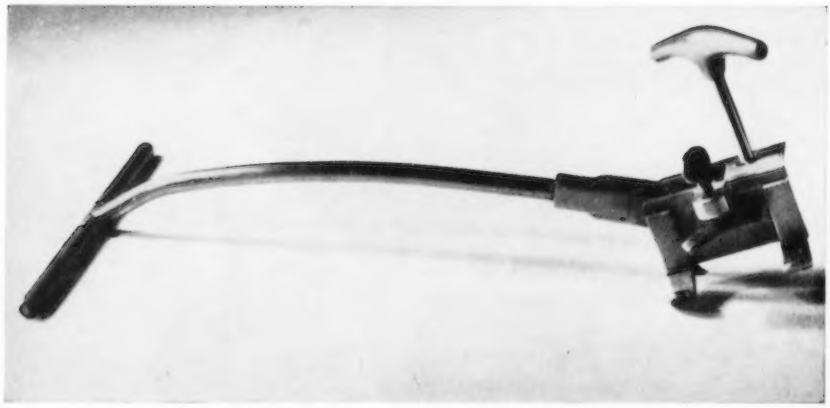

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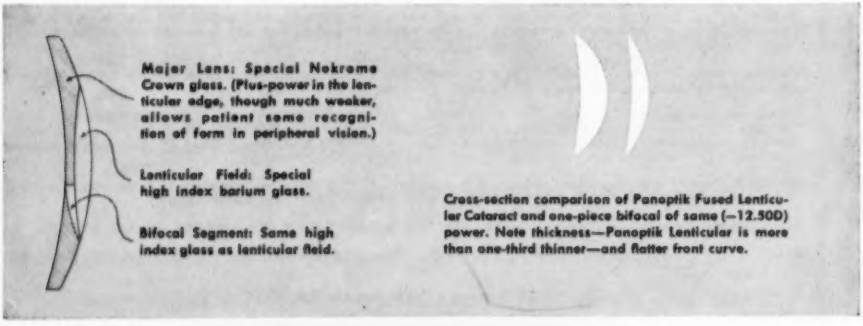
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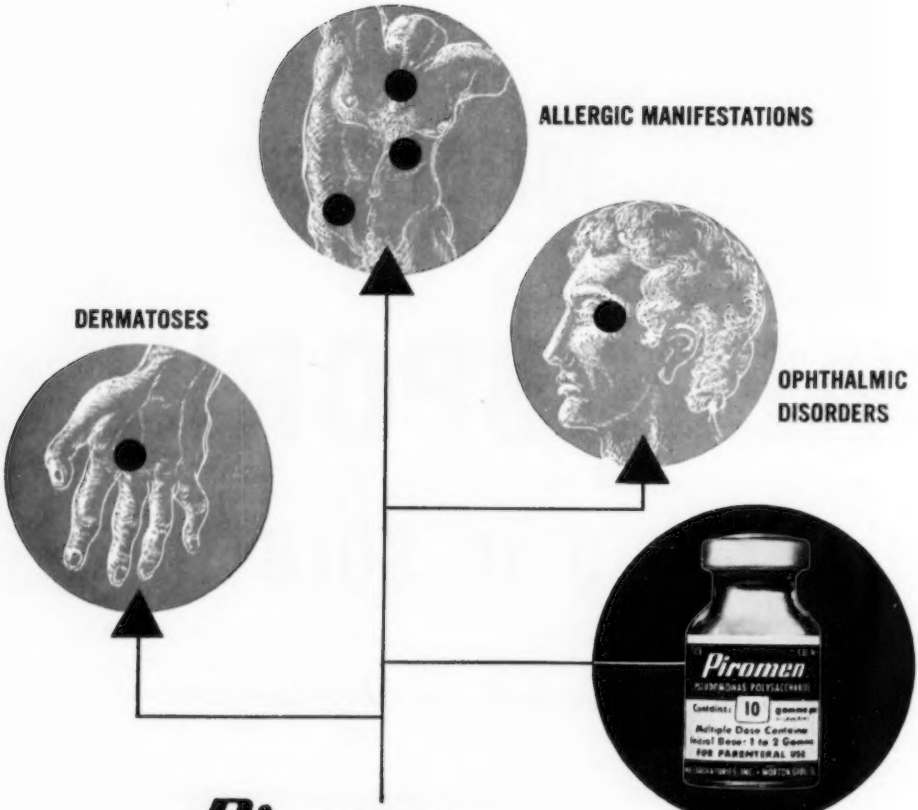

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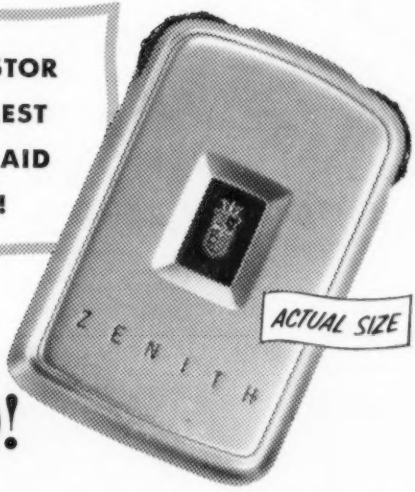

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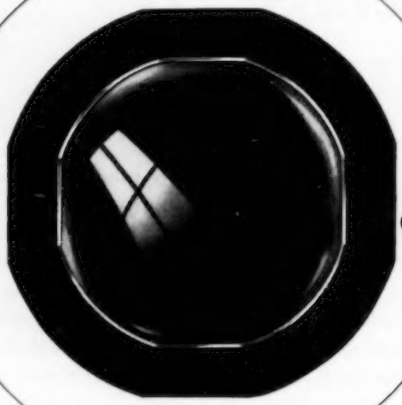

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Reference to RHINALGAN:

1. Van Alyea, O. E., and Donnelly, W. A.: E.E.N.&T. Monthly, 31, Nov. 1952.
2. Fox, S. L.: AMA Arch. Otolaryn., 53, 607-609, 1951.
3. Molomut, N., and Harber, A.: N.Y. Phys., 34, 14-18, 1950.
4. Lett, J. E., (Lt. Col. MC-USAF) Research Report, Dept. Otolaryn., USAF School Aviat. Med., 1952.
5. Hamilton, W. F., and Turnbull, F. M.: J. Amer. Pharm. Ass'n., 7, 378-382, 1950.
6. Browd, Victor L.: Rehabilitation of Hearing, 1950.
7. Kugelmass, I. Newton: Handbook of the Common Acute Infectious Diseases, 1949.

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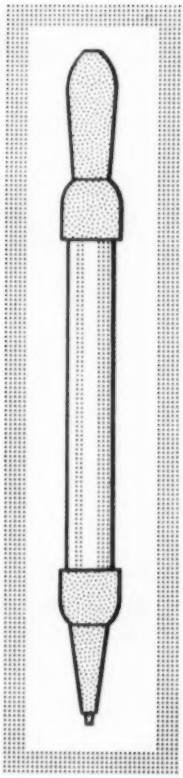

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Address of the President

AMERICAN MEDICAL CENTERS: THEIR ROLE IN EDUCATION

WALTER H. THEOBALD, M.D.
CHICAGO, ILL.

ADDRESSING such a distinguished audience as this is both a great honor and a difficult assignment. Fortunately for me, in approaching my task here today, I had one very comforting thought. It was comforting to know that I was free to select my own subject, that I could choose a topic of which I had some personal knowledge and experience. In other words, it was reassuring to know that I could follow the old maxim that, "In any public address it is always best if you know what you are talking about!"

In a manner of speaking, I have lived with my subject for almost twenty years. In 1946 I was elected president of the Medical Center Commission of Chicago—a state agency created by the Illinois State Legislature in 1941 to carry out the provisions of the Medical Center District Act. As a physician, as a teacher, and as an administrator I have seen that Medical Center and others like it grow tremendously in size and influence. It has been an inspiring and stimulating experience to have had a part in this evolution, and to observe at close hand its meaning to the American people and to our profession.

That is my justification for deciding to speak to you about the development of our great Medical Centers, with particular reference to their role in education.

From the beginning of time practitioners of the healing arts have relied upon a close personal relationship between doctor and patient. More and more, with the development of a vast complex of technical aids to diagnosis and treatment, we have come to rely upon the aid of well-trained and well-organized groups of technicians whose skills complement those of the doctor and surgeon. Today, medical practice is more than ever the joint application of scientific knowledge and technical skills.

As this pattern has developed there has been a growing tendency to concentrate in one location all the known aids to healing. This is not an accidental development. It stems from our realization that medical education and research are indispensable elements in the prevention, mitigation and cure of illness. The closer they are correlated with diagnosis the more effective and efficient will be the treatment. That is what is happening in our medical centers today.

Such planning for medical care was inevitable. If there is one lesson that can be learned from the rapid strides of medical science in the last century, it is this: the various types of facilities and services necessary to meet adequately the needs of the sick are so closely related to one another, and so interdependent, both professionally and economically, they must be considered as an entity.

And if there is another lesson we can learn from recent history—and I believe there is—it is the lesson of medi-

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cal economics. As medical care has become more complex and more complete, it also has become more expensive. It behooves all of us, in every branch of the profession, to keep constantly in mind the obligation to bring good medical care within the means of more of our citizens. The public properly looks to organized medicine for leadership in that direction. This challenge is one the profession must face with courage and understanding if we are to expect, and enjoy, the broadest support of the American people in our continuing struggle to preserve the values of private medicine in this country.

Here again is an area in which the medical centers can make an important contribution. They can point the way to good medical care for more people, at lower cost, by speeding scientific research, by improved diagnostic methods, by reducing periods of hospitalization, and by training *more* doctors and training them *better*. These are goals that need to have the unqualified support of our profession.

Most of the American medical centers have taken form in the last three decades. Their development has been a twentieth century phenomenon. In the vast literature of medical progress there is surprisingly little to be found describing either their physical growth or their social and civic significance. So I think it will be pertinent to this discussion if I trace briefly what has been happening in medical center construction. I suspect you will be surprised, as I was, by the results of a survey which we recently completed in order to obtain current information on this trend throughout the nation.

First, let me clarify my use of the term "medical center." It is a term frequently used to mean different things. It has at least three common applications: (1) to the group of physicians and surgeons using the same clinic or office facilities; (2) to the combination, usually in small communities, of a hospital, doctors' offices and perhaps the local health department, and (3) to the concentration, on adjacent land, of two or more health service units devoted to medical and surgical care, research and education.

My remarks here deal with the third classification. To be even more specific, I have classified as medical centers only those which have as minimum facilities a medical school, a teaching hospital and facilities for research.

The survey just mentioned shows there are at least 55 of these great concentrations in the United States, and seven more in Canada. Many are being expanded and others are in the planning stage.

In terms of plant, equipment and endowment all of these centers represent an investment of billions of dollars. They differ greatly in size, organization and administration. But all have a common objective—to centralize and synchronize the essential functions of medical practice, research and teaching. Seats of medical education form the nucleus of most of these centers and are present in all of them.

This is true also in Canada, where centers have been built around the university medical schools. Established Canadian centers are located in Edmonton, Kingston, London, Toronto, Montreal, Halifax and Vancouver. Two others are building now, in Montreal and Winnipeg.

In our own country four of the best known centers are located here in New York City: Columbia - Presbyterian, New York Hospital-Cornell, New York University-Bellevue, and the Memorial Center for Cancer and Allied Diseases. Each contains immense hospitals and schools. Each carries on a vast program

of service. Elsewhere in New York State are three other centers: in Albany, Syracuse and Rochester.

With its concentrations of population in urban areas the East logically leads in the number of established centers. New England has two notable ones in Boston: the New England Medical Center and Children's Medical Center. Another is in Burlington, Vermont. And in New Haven there has recently blossomed a new Yale-New Haven Medical Center plan.

Philadelphia has five centers, built around the University of Pennsylvania, Temple University, Jefferson Medical College, Woman's College of Medicine and the Hahnemann College and Hospital group. In Washington are the George Washington University, the Georgetown University and Howard University Medical Centers. The University of Pittsburgh has a great and growing center.

Similarly, in Baltimore, the Johns Hopkins Medical Institutions are in the midst of a building program estimated to cost 53 million dollars during the next twenty-five years. Many of its 35 buildings are over seventy years old, and are being rebuilt, remodeled or enlarged. In Baltimore, too, are the professional schools and hospital group of the University of Maryland.

Other sections of the country are not far behind. In the old South are Richmond's Medical Center consisting of 17 buildings in the heart of the city, one of them over a century old. Others are at Durham, Charleston, Augusta and Birmingham, each with its medical school. The Medical Schools of Louisiana State University and Tulane both are in the center at New Orleans. And Memphis' Medical Center claims the distinction of having the largest medical college in the United States, the University of Tennessee College of Medicine, which last year had over seven hundred students.

In the far West are influential centers in Seattle and Portland. The University of California is presently consolidating its medical school, teaching hospitals and other medical units on the same campus. The Denver Medical Center is the principal center of medical education in the Rocky Mountain States.

And in the Southwest, Texas boasts (I use that word advisedly, but affectionately) of four great centers, two in Dallas and one each in Galveston and Houston. What has happened in Houston is enough to fill any medical administrator with colossal envy. The Texas Medical Center, Inc., chartered only eight years ago, already has $63,000,000 worth of large, modern hospitals, medical, dental and nursing schools on 164 acres of land, with 60 acres more available for expansion. More than that, it has endowments in excess of $300,000,000. If I seem at this point to have taken on a vivid green tinge, you may attribute it to my dreaming of what we could do with 300 million dollars in the Chicago Medical Center District!

I have reserved until the last any reference to the Middle West for two reasons. One is that in some respects the development there is quite unique. The other is that I intend to say a few things about the center I know best—the Chicago Medical District—and modesty has restrained me until now.

We do have some great medical centers in the central states, for example the noted one at the University of Minnesota and others at Ann Arbor, at Cleveland and Columbus, at Oklahoma City, at St. Louis, Indianapolis, Madison and Kansas City.

And another Mid-West center, the one in Iowa City, has demonstrated how

such facilities can effectively serve a geographical area beyond its immediate and usually urban surroundings. The Iowa City Medical Center operates a distinctive state-wide ambulance service, consisting of 32 vehicles, each of which travels approximately 7,500 miles per month in transporting some two thousand patients to and from the Center's hospitals. This is an experimental program whose influence may well be felt elsewhere in the years ahead.

Now I come to Chicago, which we speak of with pride, and we believe with some reason, as becoming the medical capital of the world. Located there is the University of Chicago Medical group, long noted for its advancement of medical knowledge. There, too, are the Northwestern University professional schools and three associated hospitals occupying fifty acres on the lake front, and the well-known Michael Reese hospital group now engaged in a huge expansion program. We have all these in addition to the big and growing Medical Center District on the near west side where are concentrated three medical colleges, five other professional schools, five hospitals and a dozen other buildings valued in excess of $175,000,000, exclusive of the 478 acres of land within the borders of the district.

Since I have been president of the Chicago Medical Center project, I feel a bit like the elderly verger of a rural church where a visiting preacher was conducting services one evening. As had been his custom for many years, the old gentleman passed the collection plate at the proper time. When the basket had made the rounds, the visiting minister noticed the old man slip his hand into the plate and extract a half dollar. The minister approached him when the service was over and started to berate him, whereupon a pained and hurt expression came over the old man's face.

"Why, parson," the old verger explained, "I wasn't stealing that half dollar. That's the same one I've been using for years to get the collection started."

So today, I speak of the Medical Center District because I am familiar with it, and because it illustrates my thesis that in the medical centers lie the best hopes for the expanded program of medical education that the nation needs.

I have mentioned that we have in the Medical Center District three medical colleges and five hospitals. The latter include the University of Illinois Research and Educational Hospital, Presbyterian Hospital and the huge Cook County Hospital. Recently added have been a 500-bed Veterans Administration facility and a 489-bed Illinois State Tuberculosis Hospital. Together these hospitals provide 5,600 beds. These institutions, plus the Cook County Graduate School of Medicine, furnish the facilities and patients so essential to medical training. In addition to the medical and dental schools, and the School of Pharmacy of the University of Illinois, the District also houses three nursing schools and the dental school of Loyola University. Nowhere else in the world, I believe, can this grouping of medical institutions be paralleled.

What does all this mean to the patient, the doctor, the teacher, the researcher and the student? To each it means advantages found nowhere else. It means bringing together in close proximity highly qualified teaching and research personnel. It means having access to the best facilities and equipment. It means greater opportunity to apply scientific knowledge to medical care and instruction.

There is a phrase, "geographical full time," which aptly describes another real advantage of the medical center to the doctor. There it becomes possible

for many of us to see our patients, do some teaching, and direct or participate in research—all within walking distance of one point. Doctors who practice in metropolitan areas know what that means in saving of travel time in the performance of professional duties.

How does research benefit, and how does it contribute? Frequently the best doctors are attracted to medical centers because they will have there the stimulation of close associations with colleagues and students, as well as the opportunity to pursue research of particular interest to them. Thus the practicing physician can increase his contribution to medical science and in turn be benefited by the research work of his colleagues who are not engaged in practice.

Finally, the medical center is where the student can obtain the most thorough medical education, both academically and in terms of experience, and contacts with men in every field of medicine. It has been said that ten hospital beds are needed to properly train a medical student. In the medical center they are close at hand. These are positive advantages that earlier generations of doctors did not always, indeed did not often, have.

More doctors are needed in America today. Just how many more are needed I do not know. Convincing statistics can be cited in support of both sides of the argument as to whether our medical schools, which have grown steadily in capacity, have or have not kept pace with greatly increased medical needs. But almost everyone agrees we need more doctors than are now active in general practice. We also need better trained doctors.

Our medical colleges still can accommodate only one out of three qualified applicants. The ratio of practicing physicians to population is about what it was twenty-five years ago. But the demand for medical services has multiplied. Today an estimated 60 million people, about 38 per cent of the population, have some kind of prepaid hospital or medical care insurance, eloquent evidence that they are far more hospital and medical-care conscious than formerly. Added to these increased civilian demands is the constant pressure of military requirements. The present level of mobilization calls for more than 13,000 physicians in uniform, as compared with 6,500 in 1950. And no one knows whether that demand will become greater.

We are currently graduating about 6,800 medical students a year and licensing some five hundred other physicians, mostly doctors from foreign countries. But deaths and retirements are averaging about 3,800 a year — old doctors do fade away, and even die! — so the net annual increase is about 3,500.

Some competent observers believe that in spite of the growth of medical schools, in spite of better equipment, drugs and methods of practice, there is room in the United States for at least five thousand more doctors a year than we currently are turning out.

Whether that estimate is too high or too low, the point I wish to make is that the development of our medical centers offers the brightest promise of providing for the future the volume and quality of medical education the nation requires.

In the United States we have 73 medical schools. Most of them are in the medical centers I have described. Multiply by 55 the number of established centers having medical schools by all of the advantages in training and education to be found there, and you will see why I say that the medical centers are playing an increasingly vital role in

education. It is small wonder they are receiving more and more professional and public support.

Make no mistake about this: the greatest challenge confronting our profession today is that of meeting the legitimate need of our people for more medical services, and making those services available to all citizens regardless of their station in life.

We must continue to prove now, next year and in the years to come that our system of private medicine is equal to the task and that it is the only system for America. The perils of socialized medicine may for the moment be said to have waned. But agitation continues in some quarters. And it could easily become a clamor again if private medicine should fall down in any vital area of its public responsibility. I hope we will always look upon good medical care as the right of the many and not the privilege of the few.

From our own observation of world events we have learned that Communism takes root and thrives on human misery and suffering. Starving, desperate people seek desperate solutions of their problems; some having turned to Communism in the blind, forlorn hope it will somehow bring them a better life.

We in America and in the rest of the civilized world are trying to tell this story to the millions living under the evil yoke of Communism, either by desperate choice or the compulsion of military force. The freedom story is also one we cannot tell too often to our own people here at home.

How better can we demonstrate the values of a free society, how better can the Voice of America speak, than in the firm, convincing voice of the record which shows that here, in an environment of freedom, science, religion and politics have joined forces to perform a service to humanity—a service extended alike to men and women of every race and creed, and every station of life?

This record is being written today by the men and women of medicine. One of its brightest chapters is being written in the medical centers. Our professional values, the principles of freedom of practice for which we have always fought, are being preserved and, I believe, strengthened there. And in the working side by side of private and public health agencies lies the promise of solutions of some of our professional dilemmas.

More than that, I believe we are creating in the medical centers new values in improved methods and services. With thoughtful professional control those services can be extended well beyond their present scope. Not every city and town can support a multi-million dollar group of buildings, of course, but all can benefit from improved medical care, and the services of existing centers can be made available to more people through intelligent planning and organization.

Seneca, the ancient Roman philosopher, once said: "Our forefathers have done much, but they did not finish anything." We could, of course, say the same, and the same will be said of us by our grandchildren. But if we are guided always by the zeal for serving humanity better, which motivated our medical pioneers, we are bound to accomplish something in carrying forward the banner of professional progress. And, to paraphrase the Biblical allusion, we will have the satisfaction of knowing that we fought the good fight and kept the faith.

ONE HUNDRED YEARS OF LARYNGOSCOPY: TO THE MEMORY OF GARCIA, TUERCK AND CZERMAK

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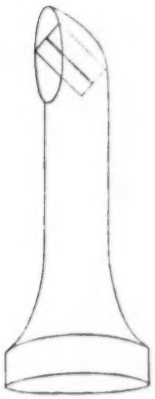

FIG. 1—Bozzini's laryngeal speculum (after Hufeland). From M. Mackenzie: The Use of the Laryngoscope, London, 1865.

AT THE time of this year's Academy meeting it is exactly one hundred years ago that Manuel Garcia succeeded—for the first time in medical history—in seeing the vocal cords in the living with the help of reflected light and a mirror. It is fitting that, at this anniversary, we pause for a moment in the pursuit of our medical tasks to honor the memory of the men who developed the art of laryngoscopy: the singing teacher, Manuel Garcia, and the physicians, Ludwig Türck and Johann N. Czermak.

To see the vocal cords in the living had been the goal of many physicians since the beginning of the nineteenth century. In 1807 a Dr. Bozzini from Frankfurt-Main published a description of instruments for the inspection of hidden cavities of the body.[4] His laryngeal speculum (fig. 1) consisted of a hollow metal tube with a fitted-in mirror. Other arrangements of mirrors had been recommended by Senn in 1827, Babbington in 1829, Bennati in 1832 and Baumès in 1838. None of these contraptions seems to have achieved anything better than a view of the hypopharynx and the epiglottis. Liston[3] mentions in 1840 the use of a dental mirror for the diagnosis of obstructing edema of the entrance to the larynx. Avery (1844) again tried a speculum with a mirror. None of these workers describes an actual observation of the vocal cords in action.

It was left to a singing teacher to solve the problem of the study of the cords in the living. Manuel Garcia,[5] the son of a world-famous singer of Spanish descent, started his career as an operatic singer. Together with his father he came to New York in 1825, where they presented the first performances of Mozart and Rossini operas in America.

After a breakdown of his voice which he later attributed to the strain of premature artistic singing during the change of voice, he retired from the stage to become the most famous singing teacher of his time. He taught voice first in Paris, where he published in 1840 his "Mémoire sur la voix humaine." The same year he moved to London, where he lived until his death in 1906 at the age of 101 years.

Garcia was deeply interested in the physiology of the vocal organs. He stud-

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ied medical books, dissected animals and human cadavers, and experimented with removed specimens of the intact respiratory tract. He did not know that in studying the sounds that a squeezing of the lungs produces in the larynx he followed the footsteps of Leonardo da Vinci who, three hundred years before, did the same experiments, records of which have only lately come to light.[7]

In his studies of vocal cord function Garcia—as others before him—felt severely handicapped by the lack of a method that permitted observation of the cords in action. He was quite unaware that, as we have seen, other scientists had advocated the use of a mirror for this purpose. He came to the idea of mirror laryngoscopy quite independently and, thanks to his dexterity, he became the first man to see the cords in the living.

In September 1854, during a visit to Paris, he stood in the courtyard of the Palais Royal and, with the creative insight that sometimes strikes men of genius, he suddenly visualized the solution of his problem by a combination of illumination and reflection. As he told it later to Sterling MacKinlay[6]: "In a moment I seemed to see the two mirrors of the laryngoscope in their proper position as though they were before my very eyes." He hurried to the shop of the instrument maker Charrière and there found and bought a small dental mirror on a long handle. He went home, selected a window through which bright sunlight streamed and stood there with his back against the window. He caught the light in a handmirror so that the luminous rays were thrown into the wide open mouth, and introduced with the other hand the warmed dental mirror into the throat until it leaned against the uvula. To continue with his own story:

> By an almost incredible good fortune I got the proper angle at the first attempt. There, before my very eyes, appeared the glottis, wide open and so fully exposed that I could see a portion of the trachea. So astounded was I that I sank back into my chair, aghast, dumbfounded. I was the first human being to see the larynx of a living man, and that man myself.
>
> Slowly I recovered from the shock and rose again to my feet . . . . After a few attempts I got the exact angle for the second time and again the vocal cords made their appearance in the little circle of glass. Next I experimented in emitting various single notes, an upward scale, a downward one, an arpeggio, the registers. Then a laugh, a cry, all sorts of queer sounds, animal imitations, whatever came into my head. On and on I went, like a madman, until the voice was so completely tired that I had to remain silent for a long, long time.

After his return to London, Garcia started a series of self-observations with the mirror, concentrating on the different phases of singing. He prepared a report to the Royal Society of London, which was presented in 1855 under the title "Physiological Observations on the Human Voice."[2] It contained descriptions of remarkably exact observations of the vocal cords in inspiration and phonation, in singing from chest-register to falsetto, and during the different types of artistic singing. With remarkable modesty he made no mention of the fact that, in seeing his own cords, he had achieved something no other man had done before:

> The method I have adopted is very simple. It consists in placing a little mirror, fixed on a long handle suitably bent, in the throat of the person experimented on, against the soft palate and uvula . . . . If the observer experiments on himself, he ought, by means of a second mirror, to receive the rays of the sun and direct them on the mirror which is placed against the uvula.

Garcia himself did not anticipate the value of laryngoscopy for medical purposes. His paper was treated by the English physicians with apathy if not incredulity. Only two years later the

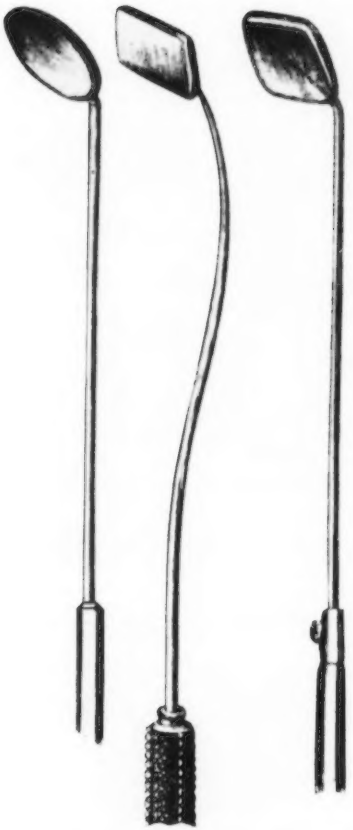

FIG. 2—Türck's and Czermak's laryngeal mirrors. From Türck.[10] Türck's circular mirror is on the left. The quadratic mirrors with rounded corners are Czermak's models. The one on the right permits the detaching of the mirror from the handle.

FIG. 3—Autolaryngoscopy, using artificial light. From Czermak.[1] The illustration shows Czermak viewing his own vocal cords. The laryngeal mirror is introduced with the right hand. The left hand holds a small plane mirror which serves both to catch the mirror image of the larynx and to shade the eyes from the light of the lamp.

neurologist Ludwig Türck in Vienna began to use the laryngeal mirror on patients of his hospital. He never made it clear whether he knew Garcia's experiments. But he was never too eager to acknowledge the work of others, while Czermak always gave full credit to Garcia's priority.

In any case, Türck experienced a great many difficulties in the use of the laryngeal mirror on patients. Like Garcia he used only sunlight as the source of illumination. But while Garcia, as a well-trained singer, was able to relax his throat completely and to tolerate the touch of the mirror well, Türck had to struggle with untrained and sensitive patients. In April 1858 he reported to the Gesellschaft der Aerzte (Medical Society) of Vienna about his experiments.[9] He ended his report with a remark that he was to regret later on: "He was," the minutes of the meeting read, "very far from having very sanguine expectations about the employment of the laryngeal mirror in medicine."

At the time Türck made this statement he had already stopped working with the mirror on patients. But, by that time, another physician had taken over. Johann N. Czermak, professor of physiology in Budapest, had borrowed Türck's mirrors, which he slightly modified (fig. 2). He intended to use them to study the mechanism of the guttural

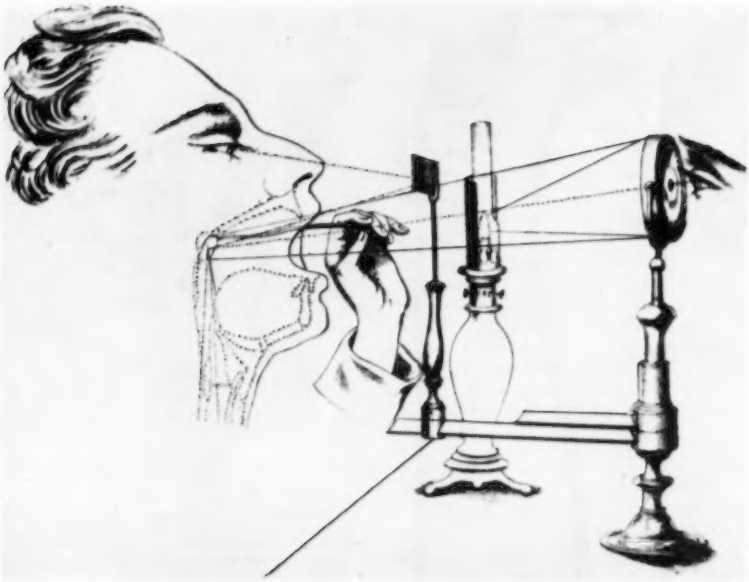

FIG. 4—Laryngoscopy with Czermak's stand. From Czermak[1] Schematical drawing, used by Czermak to illustrate the function of his stand for self-observation and demonstration of the cords to a student. Note that the practice of pulling the tongue forward has not yet been introduced.

FIG. 5—Czermak demonstrates laryngoscopy. Courtesy Dr. E. Froeschels. One of the oldest existing photographs of a laryngoscopy. Czermak, sitting on the right, has introduced the laryngeal mirror under self-observation in the small plane mirror while the famous physiologist, Prof. E. W. von Brücke, looks through the center hole of the concave mirror. Sunlight is being used.

sounds in Arabic languages and to repeat Garcia's experiments.

Czermak, a man of great technical ingenuity, was quick to realize the medical value of laryngoscopy, and in a short time he overcame all difficulties in the practical use of the method. The biggest obstacle to eliminate was the dependency on the clock and the barometer. As long as observations could be made only in daytime and in clear sunlight laryngoscopy was only of very limited value. Czermak found that he could see his own cords just as well if he used the light of a lamp (fig. 3).

But before the advent of gas light and the invention of the electric bulb, sources of artificial light were weak and troublesome to handle. To concentrate the rays into a strong beam of light, Czermak had the happy idea to use Ruete's large ophthalmic mirror. For his demonstrations he constructed a two-armed stand (figs. 4 and 5) which permitted self-observation in a small plain mirror while the second physician viewed the cords through the center hole of the concave mirror. Like Garcia, Czermak had a wide-open and rather insensitive throat, which made it easy for him to demonstrate his own cords to numbers of physicians who attended his lectures and courses.

Finally, he attached the concave mirror to a headband, and the head-mirror, as we know it, was born. Laryngoscopy was now a practical and simple method of examination and treatment. As Czermak[1] put it: "The eye has become the guide of the operating hand."

Czermak became the propagandist and teacher of laryngoscopy. He demonstrated the laryngeal mirror in hospitals and medical societies all over Europe. He wrote a book on the new technic[1] in the hope "that, at least, a single physician can be found everywhere who is able to use this simple instrument with skill and success."

Türck, who had discontinued his experiments with the laryngeal mirror in misjudgment of its value, became increasingly jealous of the glory that settled on Czermak. A controversy about the priority of medical laryngoscopy developed between the two men and filled the medical journals of Europe with bitter recriminations. In the books they wrote,[1,10] they staked their rival claims to medical fame.

Today, it is easy to place the merits where they belong. While to Türck goes the technical priority of having been the first to use the laryngeal mirror for medical purposes, Czermak should be remembered as the man who developed laryngoscopy as a practical method. In addition, he was the first to use the upturned mirror for inspection of the rhinopharynx.

Türck made up for his earlier errors in judgment by a patient and thorough study of laryngeal pathology. His textbook on the diseases of the larynx[11] set a high standard for later generations. His atlas of laryngeal diseases[12] with its numerous plates of colored lithographs is a miracle of precise observation and clarity of illustration if one considers the limited facilities of the time. The device of pulling the tongue forward to free the field of vision was first described by him.

During all the excitement of the priority fight Garcia remained aloof. With great modesty he belittled his own part in creating the art of laryngoscopy. It is reported by a friend of Garcia's that "the old gentleman wondered what all the fuss was about; he had never meant to become the founder of a new medical specialty, and he protested that the mirror had cost him only six francs."[8]

The world felt differently. In 1905, at Garcia's one hundredth birthday, which

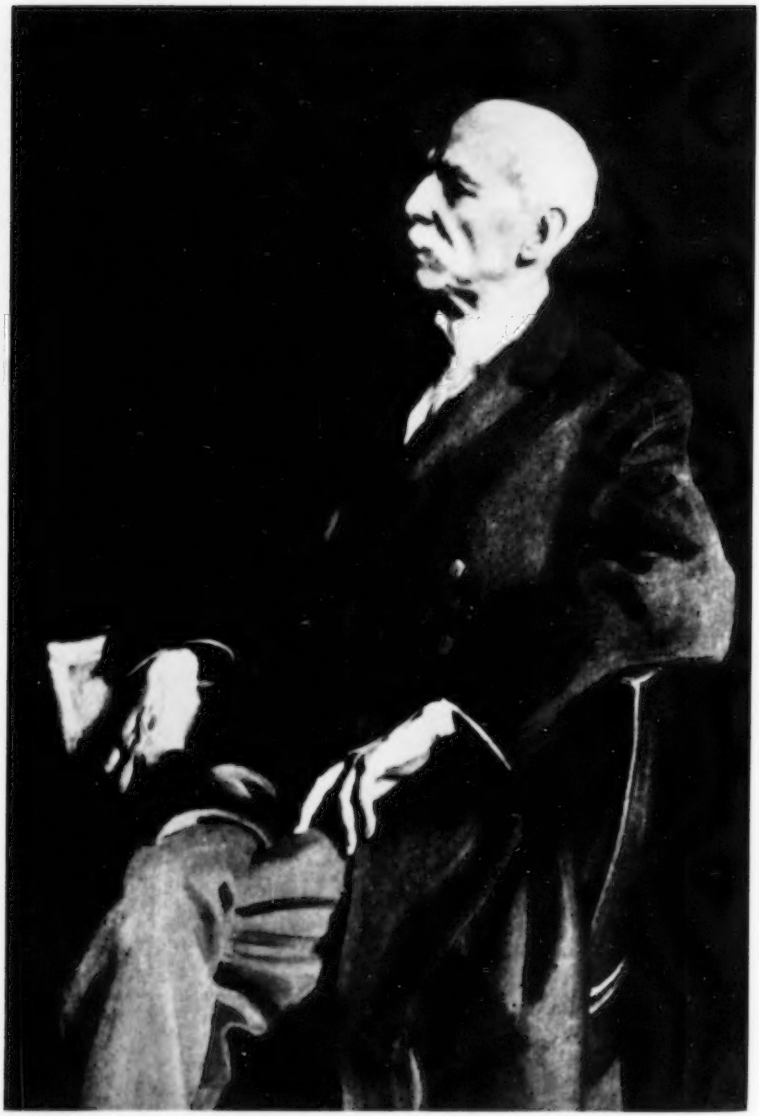

FIG. 6—Manuel Garcia at the age of one hundred years. Portrait painted by John F. Sargent. Courtesy Rhode Island Institute of Modern Design.

found him in good health and remarkable vitality, delegates from all over the world celebrated him as a man who had made his mark in medicine. Honorary medical doctorates and medals were bestowed on him. Physicians and singing teachers from many countries contributed to a birthday present: his portrait painted by John F. Sargent (fig. 6). Sir Felix Semon, of Semon's Law fame, hailed him as the "Father of Laryngology."

At the centenary of Garcia's discovery, the controversies about priority belong to the past. We laryngologists of today can only acknowledge with respect and admiration the debt of gratitude we owe to the three men who gave us the laryngeal mirror, one of the most important tools of our profession: Manuel Garcia who, for the first time, saw the vocal cords in the living; Johann N. Czermak who perfected the technic of laryngoscopy, and Ludwig Türck who laid the foundation for the study of laryngeal disease.

REFERENCES

1. Czermak, Johann N.: Der Kehlkopfspiegel und seine Verwendung (The Laryngeal Mirror and Its Use), Leipzig, Engelmann, 1860.
2. Garcia, Manuel: Physiological observations on the human voice, Proc. Roy. Soc. London, vol. VII, No. 13, 1855.
3. Liston, Robert: Practical Surgery, ed. 3, 1840, p. 417.
4. Mackenzie, Morell: Manual of Diseases of the Throat and Nose, vol. I, London, Churchill, 1880, p. 215. Contains a summary of the history of laryngoscopy before Garcia.
5. MacKinlay, Sterling: Garcia the Centenarian, London, Blackwood, 1908.
6. ———: The Genius of Manuel Garcia, London, Musical Opinion, 1948, p. 445.
7. Panconcelli-Calzia, G.: Leonardo als Phonetiker (Leonardo as Phonetician), Hamburg, Gildenverl., 1943.
8. Stevenson, R. Scott, and Guthrie, D.: A History of Otolaryngology, Edinburgh, 1949.
9. Türck, Ludwig: Zeitschrift d. Gesellschaft d. Aerzte zu Wien, 1858, No. 17, Minutes of the Society.
10. ———: Praktische Anleitung zur Laryngoskopie (Practical Guide to Laryngoscopy), Vienna, Braumüller, 1860.
11. ———: Klinik der Krankheiten des Kehlkopfes (Diseases of the Larynx), Vienna, Braumüller, 1866.
12. ———: Atlas der Kehlkopfkrankheiten (Atlas of Laryngeal Diseases), Vienna, Braumüller, 1866.

Symposium: Medical Management of Chronic Otic Skin Infections

RATIONALE OF THERAPY

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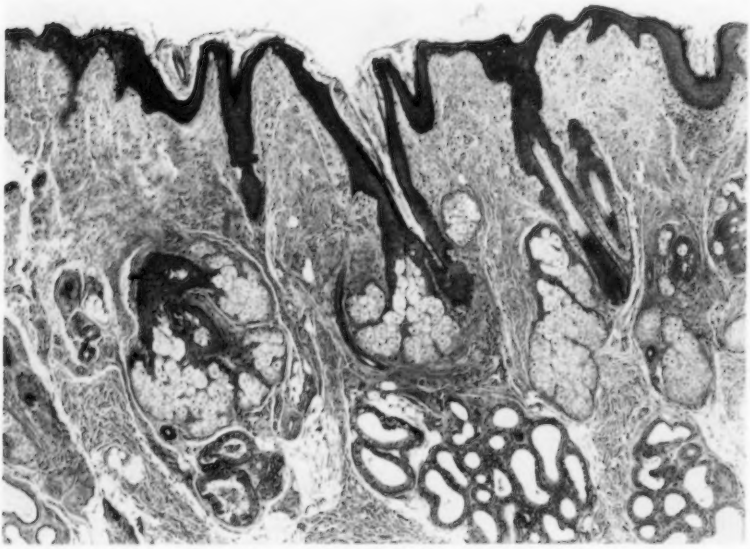

FIG. 1—Photomicrograph of normal skin obtained from the lateral one third of the external auditory canal.

TREATMENT of diseases involving the external auditory canal, the mastoid and fenestration cavities would be simpler if we were in possession of more basic scientific information regarding the physiological function of normal skin and the malfunction of the diseased lining of these cavities. It is the purpose of this part of the symposium to present some of the established facts and to refer to some of the investigative work being done. On the basis of this accumulated information, a rationale of therapy will be suggested.

There are some important differences between the skin of the ear canal and that of other areas. Let us compare normal skin lining the external auditory canal with that covering the ventral surface of the thigh (which is the most frequent donor site for skin grafts used in the ear). We may make the following observations.

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The skin of the ear canal (fig. 1) consists of stratified squamous epithelium containing hair follicles, ceruminous glands and sebaceous glands opening upon the surface of the skin. The sebaceous glands are widely distributed in the external third of the ear canal and with the hair follicles form a pilosebaceous unit superficially placed in the corium. The so-called ceruminous glands are really apocrine sweat glands similar to those found in the axillae. They are deeply placed in the dermis and most of these drain into the necks of the pilosebaceous units rather than onto the surface of the skin.[2] It is noteworthy that the epidermal glands extend along the superior canal wall to the tympanic membrane but for only a short distance along the other walls.[9] They are found in profusion just inside the meatus of the canal.[17]

In these sections (fig. 2) obtained from skin of the thigh, we see a different picture. The epidermal glands are distributed sparsely. The paucity of sebaceous glands and the morphology of the sweat glands are significant. The latter are of the eccrine type which drain directly onto the surface of the skin. The epidermal glands keep the surface of the skin constantly bathed in an oily secretion which maintains it soft, pliable and impermeable to water.

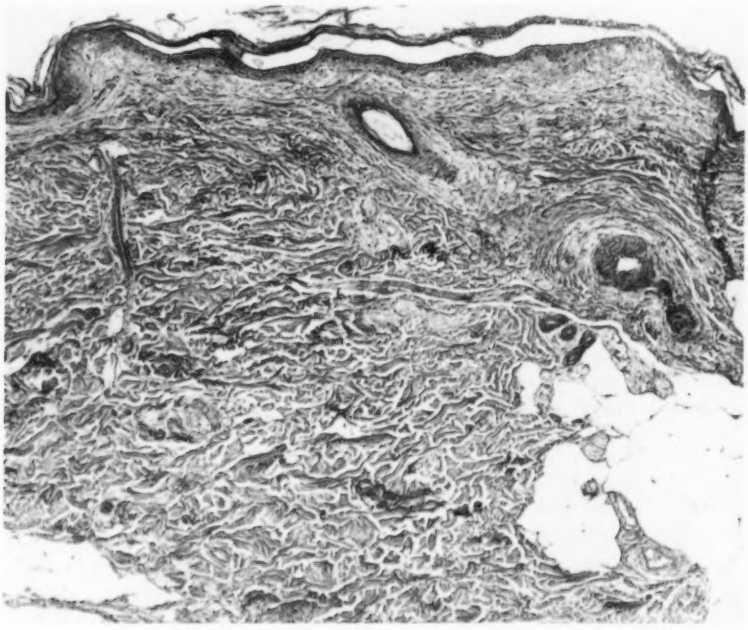

FIG. 2—Photomicrograph of skin obtained from the medial aspect of the thigh showing paucity of epidermal glands.

If we examine the available data regarding the chemical constituents of the secretions, we find the following:[1,4,5,8,18] the secretions obtained from the sweat glands show a high content of water and low viscosity and contain lower fatty acids such as acetic and propionic. The sebaceous glands produce a high viscosity secretion containing triglycerides, higher fatty acids and waxes. The com-

bined products of these epidermal glands act to inhibit the growth of endogenous bacteria[3,10] and prevent the implantation of exogenous, pathogenic organisms. The interference with these normal secretory products in the ear canal permits the development of surface changes which manifest themselves in various ways. A hypersecretion results in excessive oiliness and an overproduction of cerumen. An alteration in the proportion of the various components causes changes in the color, form and consistency of the cerumen and produces a wet, macerated skin. A reduction in the secretory activity of the epidermal glands results in an itchy, dry, scaly skin.[14]

Most important to us is an understanding of the mechanism and the significance of an insufficient production of the secretions necessary to maintain normal healthy bacteria-resistant skin. In skin biopsies obtained from patients with various forms of external otitis, one may demonstrate the thick stratum corneum plugging the orifices of the pilosebaceous units and the apocrine glands which open into them.[11]

It is my belief that absorption of water or moisture from a humid environment causes swelling of the keratin layer or plugs. This obliterates the very small air-containing space around the hair follicle within the duct of the pilosebaceous unit (fig. 3) and prevents the secretions from the sebaceous and apocrine glands from reaching the surface of the skin. Thus a primary or preinflammatory stage of external otitis is produced.

A section from a split-thickness (Thiersh) graft to be applied to a mastoid cavity is shown in figure 4. You note that only the epidermis and a very small amount of corium are present.

It is obvious that those of us who use this skin-grafting technic are in the habit of lining the mastoid cavity and middle ear with an epithelium from which the epidermal glands have been removed. This crippled epithelium is incapable of maintaining itself in a healthy state except under ideal conditions since the glands which normally furnish vital

FIG. 3—Photomicrograph of skin of the external auditory canal showing plugs within the pilosebaceous unit (x180).

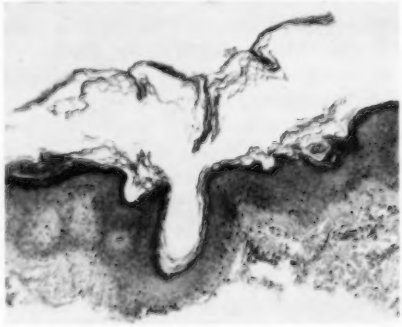

FIG. 4—Photomicrograph of split thickness graft obtained from the thigh showing absence of epidermal glands (x75).

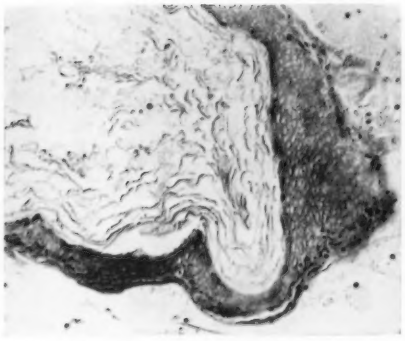

FIG. 5.—Photomicrograph of exfoliating layers of stratum corneum in skin obtained from a split-thickness skin-grafted mastoid cavity (x160).

lubrication have been surgically removed. As a result, casts consisting of dry, exfoliating layers of stratum corneum are formed (fig. 5) and must be removed mechanically at various intervals. Thus, the ideally healed postoperative mastoid and fenestration cavities have much in common with the primary or preinflammatory stage of diffuse external otitis.

It is clear then that the plugging of the orifices of the pilosebaceous ducts, a malfunction of the epidermal glands, or the surgical removal of the secretory portion of the epidermal glands prevents the lubricating and bacteriostatic secretions from reaching the surface of the skin.

Under conditions of low temperature and low humidity, and where the cavities are protected against the introduction of irritating liquids, and finally in the absence of local trauma to trigger the infection, the poorly functioning skin remains dry and offers a poor medium for the growth of organisms.

When, however, the environmental temperature and humidity are elevated for any prolonged period of time, moisture begins to accumulate within the exfoliated scales and sheets of cornified epithelium. This permits a limited growth of endogenous bacteria. If, now, macerating liquids are introduced into the cavity or the skin is traumatized in one manner or another, exogenous bacteria and/or fungi are readily implanted and grow luxuriantly in this ideal culture environment.

The opportunist bacteria (particularly the gram-negative bacilli for which there is no established local immunity) flourish and produce a secondary inflammatory disease.[12,15,16] Depending on the species and virulence of the organism, the inflammation may be a mild uncomplicated one which is easily controlled or a more difficult complicated form with associated cellulitis, lymphadenitis or abscess formation.

It is to be noted then that in the ear canal we are first confronted by a primary mild noninflammatory condition which manifests itself in itching, absence of ear cerumen and a dry scaly thickened skin. The culture reveals an apparently normal bacterial flora. This is not to be confused with the secondary inflammation superimposed on the first, consisting of a bacterial and/or mycotic infection in all grades of severity and with various complications.

Let us turn for a moment to the split-thickness skin-grafted mastoid cavity. In a limited number of cases we have been able to study such skin removed some years following the original radical mastoidectomy. The sections reveal the atrophy of the epidermis, a loss of rete pegs, the fibrosis of the dermis and, most important, we think, the absence of sebaceous and apocrine glands (fig. 6).

Under conditions of high temperature and humidity, the dry cornified epithelium takes up moisture. Bacteria and fungi begin to grow on the surface of the exfoliating cast while endogenous bacteria multiply between the casts and

the crippled skin lining. If the infection is unchecked, there is rapid dissolution of the skin lining and a piling up of granulations and pus (fig. 7).

It is not clear at this time what process is involved in the increased susceptibility of fenestration cavities to recurrent infection. When skin grafting is used, the mechanism described above may apply. It is likely that the over-use of various chemotherapeutic agents in the postoperative packing may produce the effect of blocking the epidermal ducts or may cause sufficient chemical inflammatory reaction within the dermis to destroy the important secretory glands. As in the other instances, the local defense mechanisms are lost and unchecked bacterial growth occurs.

FIG. 6—Photomicrograph of grafted skin removed from the reoperated radical mastoidectomy cavity showing atrophy of epidermis, loss of rete pegs and absence of epidermal glands.

On the basis of this very brief review of some of the factors which I believe are involved, the following rationale of therapy is suggested.

1. In general, the inflammatory, metabolic and endocrine changes which are found in the skin of the rest of the body are also to be observed in the skin of the ear canal. The same general principles which govern the treatment of the skin elsewhere should therefore apply to the skin of the ear canal.[6,7]

2. The primary mechanism involved in many of these diseases of the ear canal and mastoid cavities appears to be an interference with the normal outflow of epidermal secretions onto the surface of the skin. This produces a dry, scaly, wax-free skin.

3. It follows that the early removal of the obstruction to these epidermal glands is desirable before they are destroyed. Where this is not possible, some form of artificial ear secretion should be applied.[13]

4. Under conditions of low temperature and humidity and absence of trauma, a high percentage of such crippled ears have no serious difficulty.

5. Under unfavorable circumstances, such as persistent high temperature and humidity, local trauma and the introduction of macerating liquids, the lin-

ing membrane offers an ideal culture medium for the rapid growth of the endogenous bacteria or any foreign bacteria or fungi present in the environment.

6. Such opportunistic invaders then set up their own secondary inflammatory process according to the species and virulence of the organisms.

FIG. 7—Photomicrograph of skin from a reoperated radical mastoid showing infected ulceration

7. It is important at this time to obtain smears and cultures in order to determine the characteristics of the infecting organisms. The sensitivity to various antibiotics and chemotherapeutic agents should be determined.

8. The size of the cavity, the virulence of infection, and the sensitivity of the skin should determine, in part, the drug used and the vehicle in which it will be dissolved.

9. If the disease has extended into the dermis and involved the vascular and lymphatic pathways, then systemic medication should supplement the local treatment. It is unlikely that local therapy alone will effectively combat such complications. Conversely, systemic therapy alone will not sterilize the infected skin surfaces of the ear canal or its contiguous cavities.

10. Once the secondary disease and its complications are controlled, there remains the necessity to treat the primary disease in order to prevent recurrences with the same or other organisms. A change of the patient's environment may be necessary to avoid exacerbations.

11. Local dry cleansing or astringent irrigations should be used by the patient at home under the direction of the otologist in order to prevent cast formation and its sequelae within the mastoid or fenestration cavities.

12. In view of the histologic and chemical characteristics of the skin of the ear canal, consideration should be given to the use of full-thickness grafts taken from donor areas where apocrine and sebaceous glands are present in greater number than are found in the skin of the extremities, e.g., in the postauricular region and axilla.

13. Every effort should be exerted to

preserve as much of the intact skin of the external auditory canal as possible. Meticulous care should be used in applying and, if possible, suturing skin grafts into place. The injudicious use of strongly medicated packing should be discouraged.

It has not been possible in this brief presentation to quote all the evidence on which these principles of therapy are based. Many of the points are controversial and my associates and I are hopeful that future investigative work will produce practical solutions to some of these unsolved problems.

REFERENCES

1. Akobjanoff, L., Carruthers, C., and Senturia, Ben H.: Paper chromatography of the free fatty acids of human ear wax. (Unpublished data.)
2. Alzheimer, A.: Über die Ohrenschmalzdrusen, Verhandl. d. phys. med., Wurzburg, bd. 22, 1888.
3. Arnold, Lloyd: Relationship between certain physico-chemical changes in the cornified layer and the endogenous bacterial flora of the skin, J. Invest. Dermat., 5:207-223 (Oct.) 1942.
4. Bauer, Walter C., Carruthers, C., and Senturia, Ben H.: The free amino acid content of cerumen, J. Invest. Dermat., 21:105-110 (Aug.) 1953.
5. Burtenshaw, J. M. L.: The mechanism of self-disinfection of the human skin and its appendages, J. Hyg., 42:184-210 (April) 1942.
6. Gill, William D., and Gill, E. King: Otitis externa; some comments concerning the present status of therapy, South. M. J., 43:428-431 (May) 1950.
7. McLaurin, J. W.: Principles of therapy in otitis externa, Laryngoscope, 61:66-87 (Jan.) 1951.
8. Peck, Samuel M., Rosenfeld, Herbert, Leifer, William, and Bierman, William: Role of sweat as a fungicide with special reference to the use of constituents of sweat in the therapy of fungous infections, Arch. Dermat. & Syph., 39:126-147 (Jan.) 1939.
9. Politzer, A.: A Textbook of the Diseases of the Ear, ed. 6, Philadelphia and New York, Lea & Febiger, 1926.
10. Rothman, S., Amilijanic, A., Shapiro, A. L., and Weitkamp, A. W.: The spontaneous cure of tinea capitis in puberty, J. Invest. Dermat., 8:81-98 (Feb.) 1947.
11. Senturia, Ben H.: Diffuse external otitis; its pathology and treatment, Tr. Am. Acad. Ophth., 55:147-159 (Nov.-Dec.) 1950.
12. ———: Etiology of external otitis, Laryngoscope, 55:277-293 (June) 1945.
13. Senturia, Ben H., and Carruthers, C.: Prophylaxis of external otitis; preliminary report. (Unpublished data.)
14. Senturia, Ben H., and Marcus, M.D.: Etiologic classification of diseases involving the external ear, Ann. Otol., Rhin. & Laryng., 61:18-32 (March) 1952.
15. Singer, D. E., Freeman, E., Hoffert, W. R., Keys, R. J., Mitchell, R. B., and Hardy, A. V.: Otitis externa; bacteriological and mycological studies, Ann. Otol., Rhin. & Laryng., 61:317-330 (June) 1952.
16. Syverton, Jerome T., Hess, William R., Krafchuk, John, with the technical assistance of Josselyn, E. H., and Freyvogel, G. H., Jr.: Otitis externa; clinical observations and microbiologic flora, Arch. Otolaryng., 43:213-225 (March) 1946.
17. Takeda, Shinzo: Vergleichende histologische Untersuchungen über die Haut des ausseren Gehörganges, Okajimas Folia Anatomica Japonica, 23:295 (Aug.) 1951.
18. Wheatley, V. R.: Some aspects of the nature and function of sebum, St. Barth. Hosp. J., January 1953.

LABORATORY DIAGNOSIS

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Infection in the region of the ear, as in other portions of the body, requires a combination of factors: the presence of a micro-organism, the opportunity for invasion, and a susceptibility of the host tissues to infection or, stated conversely, the absence of an immediately successful defense against the invading organism. To appraise the occurrence and maintenance of infection, one must maintain continually a bilaterality of viewpoint directed on one hand toward the virulence and invasive capacity of the infecting organism and, on the other, toward the defensive factors of the host. Frequently the latter are more important, the micro-organisms being merely opportunist invaders. The significance of the structural, nutritional, and functional integrity of the tissues have been discussed at length in another portion of this symposium by Dr. Senturia.

Regardless of the relative importance of bacteria in the inauguration of chronic otic infections, a knowledge of the type of organism present is essential to the scientific management of this clinical condition. Bacteriologic examination of the exudate, by identifying the specific organism present, contributes to an understanding of the clinical course and behavior of the infection and the intensity of therapeutic attack that is required to overcome it. The advent of antibiotic therapy, with the concomitant development of means for testing the sensitivity of an organism to any specific antibacterial agent, has provided valuable aid in selecting a particular antibiotic to be used against a specific organism. This development has modified greatly our attitude toward the use of bacteriologic investigative methods in practice. By a combination of antibiotic sensitivity testing with bacteriologic identification it should be possible to make a therapeutic diagnosis overnight. These methods offer a possibility of replacing empirical, trial and error or shotgun selections of therapeutic agents with a specific antibiotic indication.

This discussion of laboratory diagnosis is based on our experience with 378 cultures obtained from patients with draining postoperative cavities following mastoidectomy or the fenestration operation.

PROCUREMENT OF MATERIAL FOR BACTERIOLOGIC EXAMINATION

The instrumentation necessary to procure exudate for bacteriologic examination is conducted with aseptic precautions. Speculum, forceps and mops should be sterile. The use of sterile rubber gloves is a convenience but is not necessary. Uncontaminated samples of exudate can be obtained without them if proper care in instrumentation is ex-

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ercised. The swab most commonly used to procure the material is a sterilized cotton-tipped wooden applicator stick supplied in a plugged sterile test tube. The sterile cotton swab is applied directly to the exudate without touching adjacent parts. When the exudate is scanty, the pick-up is more successful if the swab is first saturated with sterile broth culture medium and then wrung out partially dry by making pressure against the side of the test tube containing the medium. This maneuver will improve pick-up, will delay drying of the specimen, and will prevent total absorption of scanty exudate into the interior of a dry swab. In replacing the swab end of the applicator into the sterile test tube, no part of the applicator stick which is contaminated by unsterile fingers should be introduced beyond the lip of the test tube. This can be managed successfully by inserting the swab end of the applicator into the test tube, propping it against the side wall of the tube and breaking off the distal portion of the applicator stick and swab so that the contaminated part of the stick is completely removed. An alternate method is to cut the wooden applicator stick just above the swab with a sterile scissors, allowing the swab end to drop into the sterile tube, which is then plugged. It is ideal to flame the end of a sterile tube each time its plug is removed or replaced. Metal applicators tipped with cotton make a smaller, more delicate and more easily manipulated instrument but they have the disadvantage that, unless sterile glove technic is used, contamination is apt to be introduced as the entire applicator is usually sent to the laboratory with its contaminated end projecting into the tube alongside of the plug. In some situations, uncontaminated exudate can be obtained handily by aspiration with a sterile needle and syringe, the syringe being washed out with sterile broth medium. In cases of acute otitis media, Lahikainen has extended this technic to needle puncture of the tympanic membrane to obtain a minute amount of exudate.

The chief difference between the use of bacteriologic methods in office practice as contrasted with hospital practice is found in the problem of transportation of the material to the laboratory. Every effort should be made to cut the delay time between procurement of material and its implantation on culture medium to a minimum. If broth moistened swabs are used, a delay of one hour probably is tolerable. Some organisms are quite susceptible to the effects of drying and these include the Streptococci, Klebsiella and Hemophilus. When delay is known to be unavoidable, it is preferable for the otologist to inoculate a tube of tryptose phosphate broth which is sent to the laboratory along with two smears on slides made directly from the exudate. Situations will arise in which great delay, often overnight, is unavoidable. When material to be cultured must be held over, the preservation of moisture and vitality is best when the material is kept in the refrigerator, which has the added advantage of inhibiting the overgrowth of contaminating organisms.

BACTERIOLOGIC ROUTINE

The bacteriologic routine is designed so that a maximum amount of information can be obtained with a minimum of technical manipulation, in a short time, and with a system that obviates repetition of the procurement except in unusual circumstances.

The exudate on the swab is used to make two smears and to inoculate two culture media. The smears are air dried, then gently flamed to fix the material. Each smear is made with several separate direct swipes or passages across the

glass slide. Superimposed circling over and over the material is avoided as it tends to break up formed elements such as inflammatory cells. One smear is stained with the Gram technic and is utilized in the basic approach to morphologic classification. The second smear is held in reserve for any special staining that might be indicated by the preliminary findings. The smear contains both cells and bacteria. At times, the preponderance of the inflammatory cell type gives a clue to the nature of the process. The bacteria present in the smear serve as a control on the results of cultural study; if an organism that has not been observed in the smear of the original exudate appears in culture, the possibility of contamination is suspected. Almost always a few members of the significant pathogenic organism are present in the original smear and serve as a signpost for their subsequent cultural identification. On examining the smear, no attempt is made to identify the specific members of the gram-positive cocci except that pneumococci frequently present a characteristic form. The gram-negative bacilli are not separable by morphologic means and their presence indicates that differential culture media, particularly the sugar media, should be inoculated. Capsule formation on bacilli, an important finding, can usually be recognized in the routine preparation.

It has been our practice to inoculate the material into a tube of tryptose phosphate broth and onto a blood agar plate. The broth is used for the propagation of organisms, so that subsequent reference and subculture can be made from this master culture. The blood agar plates are used for the development of bacterial colonies and for the simultaneous determination of antibacterial sensitivity. The original material submitted for examination should be retained as long as possible in case mishap makes recourse to it imperative. In order to maintain its moist state and prevent a multiplication of contaminants, this original material is preserved in the refrigerator; it is discarded when the final report is written.

COMBINATION CULTURE AND SENSITIVITY TEST

For the use of bacteriologic methods as a routine procedure in otologic practice, it is essential that they be simple, rapid and reliable within the limits required by clinical standards. The method must offer the necessary information with a minimum expenditure of time for and attention to technical procedures so that the cost per patient can be kept at a minimum; for obvious reasons, this is essential both in clinic and private practice. The method must be rapid. It has been our experience that clinicians are quite willing to defer specific therapy in all but the most potentially dangerous infections for a period of twenty-four hours but that there is understandable reluctance to defer specific therapy for a longer time while awaiting the outcome of a laboratory examination which, in the end, must be subjugated to the judgment of clinical factors. Although the information obtained by bacteriologic examination must be reliable, it is not always necessary for it to be complete. A generic diagnosis of the organism present frequently suffices for clinical management.

As a means of achieving these objectives, we have utilized a combination culture and sensitivity test since June, 1951. This technic combines a disc antibiotic sensitivity test with the primary isolation culture on a blood agar plate. By its use the generic identification of the organism or organisms present, and their combined sensitivity to the standard antibiotics, can be reported within sixteen to twenty-four hours in the vast

majority of cases. Frequently, the antibiotic sensitivity, as tested by the disc method, is known before the species identification of the organism is completed.

Discs may be prepared in the laboratory or can be obtained commercially from a number of sources. In this laboratory at various times we have used discs from four commercial sources as well as our own. Numerous duplicate cultures and sensitivity tests set up to compare the discs from one source with those from another have given the impression that there is fair agreement between discs from various sources. In general, we favor the use of discs of relatively low concentration, of the order of: penicillin, 1 unit; bacitracin, 2 to 4 units; and 10 microgram discs for the remaining antibiotics used. A limited experience has demonstrated that in the instance of polymyxin B against Pseudomonas aeruginosa the disc method will fail to reveal sensitivity that can be demonstrated with the tube dilution technic. Experience has developed a subjective preference for the use of paper discs as against antibiotic pellets.

The disc method of sensitivity determination was adopted with the belief that it provided a measurement of antibiotic sensitivity within the rough quantitative limits required by clinical necessity. The tube dilution technic, for the estimation of antibiotic sensitivity, admittedly the standard in quantitative evaluation, is neither simple nor rapid when judged by clinical requirements. The disc method provides a simple and convenient means of applying roughly quantitative concentrations of antibiotics that have an appropriate solubility and diffusibility in bacterial media. The only common antibiotic that appears to be unadaptable to this technic is polymyxin B.

TECHNIC OF THE COMBINATION CULTURE AND SENSITIVITY TEST

The inoculum (either a moist swab or broth medium inoculated with the exudate) is applied to a blood agar plate to cover a crescentic area around three fourths of the periphery of the plate having a radial width of 2.5 centimeters. A uniform inoculation of this area with the material to be examined is achieved with the aid of several drops of sterile broth medium applied to the surface of the agar with the inoculum. It is this peripheral zone of uniform inoculation that is subsequently utilized for the placement of antibiotic discs. Surface dilution is accomplished by repeated streakings from the crescentic inoculated zone into the remaining periphery of the surface of the medium and into the central area of the plate. Each streak is made by a flamed loop traversing once through the previously inoculated area and then spread by several zigzag linear streaks. Three or four such spreadings fill the central area of the plate with streaks in which the material is progressively diluted by mechanical detachment onto the surface of the medium. Discs of the various antibiotics are equally spaced, about one centimeter (0.7 cm.) from the outside of the plate, in the crescentic zone of initial uniform inoculation.

The plate is incubated at 37° C. overnight. The following morning, sixteen to twenty-four hours later, the plate is examined for zones of inhibition around the antibiotic discs and for individual colonies. Only in occasional instances, when dealing with slow growing pleomorphic streptococci (and with members of the Hemophilus group encountered in other studies) must the plate be incubated for an additional twenty-four hours to develop colonies of a size large enough to be studied. Individual isolated colonies are almost always developed in the last or next to the last

streaking. These colonies are used for the isolation of pure strains of organisms for subsequent study. The greatest practical problem confronting the bacteriologic technician is the presence of luxuriantly growing organisms, like the gram-negative bacilli, and of spreading organisms like the Proteus group, which obliterate the colonies of other less robust organisms that might be present concurrently.

IDENTIFICATION

Gram stain smears of each type of colony are made. Study of these smears combined with an evaluation of the colony appearance and the effect of the colony upon the blood agar medium usually suffices to establish the species identification or at least the generic identification of all organisms commonly encountered except the gram-negative bacilli. Samples from isolated colonies are lifted for subsequent cultural manipulation. All gram-negative bacilli are planted in various sugar media for the study of fermentation. They are also examined for motility and for the presence of capsules. A generic diagnosis, and usually a species diagnosis, can be made in the ensuing twenty-four to forty-eight hours by consideration of the morphology, motility, encapsulation and fermentation characteristics of the organism. Again considering the subject from the practical point of view, unless an unusual type of organism is encountered, it is neither necessary nor profitable to pursue a species identification of organisms that appear to fall in the Proteus or Aerobacter genera. Problems often arise in the identification of the pleomorphic streptococci. On initial isolation, they frequently exhibit a mixed coccoid and bacillary appearance, their form suggesting a diphtheroid nature. They are usually definitely recognized as belonging to the Streptococci only after additional subculture on liquid media where their recognizable morphology is developed. Gram-positive cocco-bacillary organisms which include individual organisms having a cruciate shape are suspected of being pleomorphic streptococci. Routinely, recourse is had to the liquid medium culture that was planted the day before, and/or progressive subculture on tryptose phosphate broth.

FLORA OF POSTOPERATIVE MASTOID CAVITIES

The material for this bacteriologic study was derived from a series of cases having draining cavities following either mastoidectomy or a fenestration operation. The various organisms encountered, and their relative incidence, in 378 culture from such patients, are set forth in table I.

A total of 525 individual strains has been tabulated; 259 were isolated in solitary pure culture, 266 were identified from initially mixed cultures. The individual species have been collected into biologically similar generic groups in table II, and arranged according to frequency. Considering the nature of opportunist infections that occurs in this type of lesion, it is not surprising that the "intestinal-type" gram-negative bacilli are next in frequency to the commonest organism, the staphylococci.

It would be most difficult to assign specific pathogenetic significance to these various organisms, and undoubtedly there are occasions when the same organism is pathogenic in one situation and commensal in another. The majority of the staphylococci isolated were of the hemolytic variety, the type to which pathogenicity is most frequently attributed. The pleomorphic streptococcus, usually nonhemolytic, was the variety most frequently encountered in the Streptococcus group. From clinical and pathological considerations, it is

TABLE I

MATERIAL FROM DRAINING CAVITIES FOLLOWING EITHER MASTOIDECTOMY OR FENESTRATION

ORGANISM	NO.	%
Albus, hemolytic	200	38.1
Staphylococcus albus, nonhemolytic	47	8.9
Staphylococcus aureus	4	0.7
Staphylococcus citreus	1	0.2
Staphylococcus, unspecified	5	1.0
Streptococcus hemolyticus	6	1.1
Streptococcus viridans	2	0.4
Streptococcus, ahemolytic	12	2.3
Streptococcus, pleomorphic	28	5.3
D. pneumoniae	11	2.1
Neisseria, var	8	1.5
C. pseudodiphtheriae	47	8.9
Klebsiella pneumoniae	1	0.2
Klebsiella, unspecified	5	0.9
Proteus, var	52	10.0
Alkaligenes faecalis	39	7.4
Aerobacter aerogenes	17	3.2
Aerobacter cloacae	5	1.0
Shigella alcalescens	1	0.2
Pseudomonas aeruginosa	20	3.8
B. subtilis	1	0.2
Mucor mucedo	1	0.2
Mucor morterella	1	0.2
Rhizopus niger	1	0.2
Monilia, var	5	1.0
Aspergillus niger	5	1.0

reasonable to presume that many of these organisms are existing as opportunist agents only, growing in superficial granulation tissue or merely existing in the exudate that accompanies these lesions. A significant percentage of the organisms are probably only surface contaminants, the presence of which has a role in the maintenance of superficial ulceration and exudation which is as yet not completely understood. This group would undoubtedly include the cases of infection with varieties of Mucor and Aspergillus.

With such a selection of cases, one would expect the spectrum of the bacterial flora to be significantly different from that encountered with acute infections of the aural region.

TABLE II

GROUPS OF ORGANISMS FROM POSTOPERATIVE MASTOID CAVITIES 378 Cultures

ORGANISM	NO.	PER CENT
Staphylococci	257	48.9
Coliform bacilli	114	21.8
Streptococci	48	9.1
Diphtheroids	47	8.9
Pseudomonas	20	3.8
Fungi	13	2.6
Pneumococcus	11	2.1
Klebsiella	6	1.1
Others	9	1.7
Totals	525	100.0

THERAPEUTIC DIAGNOSIS

The demonstration of antibacterial sensitivity, and hence the therapeutic diagnosis of the indicated remedy, is made by inspecting the region of the antibiotic discs for surrounding zones of growth inhibition. We initially followed the practice of classifying organisms which were inhibited for a diameter of 13 mm. around the disc as sensitive and those which were inhibited over a 17 mm. diameter area as being very sensitive. Our additional experience suggests that it suffices to indicate only the presence of sensitivity or resistivity, sensitivity being interpreted by the presence of a zone of inhibition 12 mm. in diameter (1 mm. beyond the edge of paper discs, 2.5 mm. beyond the edge of the tablet).

If one species of organism is present, the results can be taken as indicative of the total spectrum of sensitivity of that organism. When more than one organism grow together in the crescentic outer zone of the medium, we are then interpreting a combined sensitivity reaction. Undoubtedly in this situation

TABLE III

ANTIBIOTIC SENSITIVITY OF ORGANISMS ISOLATED FROM POSTOPERATIVE MASTOID CAVITIES

	HEMOLYTIC STAPHYLOCOCCI %	NON-HEMOLYTIC STAPHYLOCOCCI %	STREPTOCOCCI %	PNEUMOCOCCI %	DIPHTHEROIDS %	KLEBSIELLA %	COLIFORM BACILLI %
Penicillin	41	41	84	100	75	0	0
Bacitracin	38	59	92	75	50	0	0
Streptomycin	34	41	71	25	75	33	22
Chloromycetin	53	62	79	50	62	33	15
Aureomycin	57	48	88	100	62	33	13
Terramycin	61	66	88	75	50	33	20
Neomycin	91	100	81	50	100		17
Erythromycin	100		100	100	80		
Approximate number of strains tested except for erythromycin	152	29	24	4	8	3	87

many reactions indicating sensitivity on the part of one organism are masked by resistivity and consequent overgrowth on the part of the accompanying organism. This has not been considered as a drawback in the clinical application of this method inasmuch as the antibiotic chosen should be effective against all organisms present. In the presence of a mixed flora, it is doubtful if we can presume upon the specific pathogenicity of any one of the organisms in combination. It has been our practice to suggest for therapy an antibotic to which all of the organisms present are sensitive. Comparison of the summaries of sensitivity of organisms tested individually against those of organisms growing in combination, confronts one with situations that are difficult to interpret. Sensitive organisms have their zones of inhibition eliminated or overshadowed by growth of a resistant organism. On the other hand, among the cocci there are instances of a higher order of sensitivity to certain antibiotics, particularly aureomycin and chloromycetin, when in mixed cultures. In tabulating the incidence of bacterial sensitivity to antibiotics, our figures are based only on organisms that were grown in species-pure culture and tested individually.

SENSITIVITY OF AURAL BACTERIA TO ANTIBIOTIC TEST AGENTS

The sensitivity of organisms to antibiotic agents, as estimated in disc sensitivity tests on 324 individually isolated species or strains, is depicted in table III. Of these, 259 organisms occurred originally as pure cultures, the remaining 65 were isolated in pure culture from originally mixed flora. Since the start of this series with penicillin, bacitracin, streptomycin, chloromycetin, aureomycin and terramycin in June, 1951, neomycin and erythromycin have been added as test agents. About three fourths of the strains have been tested with neomycin, somewhat more than one half with erythromycin. Sensitivity has been expressed as the percentage of the number of strains tested which prove to be sensitive, for each group organism against each antibiotic.

A number of generalizations can be made on rapid inspection of the figures. Erythromycin has been remarkably effective against all of the gram-positive cocci; we have encountered no strain of

Staphylococcus, Streptococcus, or Pneumococcus not exhibiting sensitivity to erythromycin. The apparent effectiveness of neomycin is also obvious. In general, the pneumococci and streptococci are highly susceptible or sensitive to the majority of the antibiotics, with the exception of streptomycin against the pneumococci. As a group the diphtheroid organisms are quite sensitive to the majority of antibiotics, the lowest incidence of sensitivity being 50 per cent against bacitracin and terramycin. The gram-negative bacilli tend to be highly resistant. No strain was sensitive to penicillin, bacitracin, or erythromycin. Among the remaining antibiotics, streptomycin, chloromycetin, aureomycin, terramycin and neomycin, there is exhibited approximately the same order of sensitivity ranging from 13 per cent with aureomycin to 22 per cent with streptomycin.

SUMMARY

A rapid method for the approximate identification of organisms found in aural exudates and a means of routinely identifying bacterial sensitivity to antibiotics in vitro are reported. The methods have been adapted to the exigencies of clinical practice, the sensitivity results with this procedure being reportable within eighteen hours.

The results obtained on studying 378 cases with this technic, including the nature of the 525 organisms isolated and their antibiotic sensitivity are tabulated.

THERAPEUTIC RESULTS

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TABLE I

FACTORS IN CHRONICITY OF OTITIS

Trauma	Psychic
Moisture	Allergic
Temperature	Endocrine
Cleanliness	pH
Size of Canal	Heredity
Organism and its Sensitivity to drugs	
Adequacy of Surgery	

IT SHOULD be deduced from the remarks of the other speakers on this panel that there is no formula which will cure all otic infections. Table I will present some of the many factors in the causation and chronicity of otic infections, some of which were covered by Dr. Senturia in another way. I think that this multiplicity must be re-emphasized. Obviously, a patient can not casually treat himself with instillations of "ear drops" whenever there is a pain or discharge from his ear. The multiplicity of factors also suggests that in spite of the most careful bacteriologic tests, a physician cannot be sure, just because certain recovered bacteria are sensitive to a specific agent in the laboratory, that applying this agent to the external auditory canal necessarily will eradicate the disease in the ear. Table II indicates the normal flora which may contaminate ear cultures in New York City.

TABLE II

NORMAL FLORA WHICH MAY CONTAMINATE EAR CULTURES

NEW YORK, 1953

ORGANISM	CASES	
	NO.	PER CENT
Staphylococcus (Coag. —)	39	42
Bacillus subtilis	22	24
Staphylococcus (Coag. +)	16	17
Diptheroids	8	9
Nonhemolytic Streptococcus	2	2
Streptococcus viridans	2	2
No growth	4	4
TOTALS	93	100

For acute otitis, whether located in the middle or external ear, correct care is usually a fairly simple matter, but we must educate some of our colleagues in general practice and in pediatrics that acute episodes can occur with chronic underlying conditions. I have seen a child with a bilateral cholesteatoma treated with 100,000 units of penicillin

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every three hours for two weeks, simply because a pediatrician believed that "there is no excuse for mastoidectomy in a child these days." We must impress on our antisurgical colleagues and on uninformed laymen that the principles of good surgery cannot be supplanted by medical treatment. If blood vessels are not near enough to the offending infection, no amount of antibiotic or chemotherapy will reach it. Delaying necessary surgery often permits an infection to become chronic. These tenets, which especially concern acute infections, are fairly well understood by otologists, but those which involve chronic infections are not so well understood.

Most authors now believe with Senturia,[7] McLaurin[6] and others, that the most important part in the management of all types of chronic otitis of the canal is a thorough cleansing before any medication is applied. There is also very little question that if medications are to be applied to radical cavities, all debris of dead skin and exudate must also be carefully removed. We find that, even with the most consummate and meticulous care, we are unable to clean most cavities or canals with cotton swabs or suction as well as we can with warm hypertonic saline solution. We even use warm physiologic saline in fenestration cavities when there is much dead skin present, at the risk of considerable vertigo. We do not believe that we have had any trouble with the salt water producing infection, probably because we dry the cavity carefully and place a water soluble medicament in it following the cleaning process. At the moment we use so-called "surgically clean" instruments and cotton, with well-washed hands, for patients with external otitis and discharging cavities of three months or more duration. Perhaps it would be better always to wear gloves as we do in recently operated cases. Without gloves one could at least wash with G 11 soap. There is no question that only absolutely sterile cotton should touch the area to be cleaned.

Of course a culture is taken before the cleaning begins. Finally, depending upon a variety of factors and, to a certain extent, according to what is expected from the appearance and smell of the exudate on the first visit, the patient is started on one of the commercially available broad spectrum preparations. For most of the cases in this study we have used either Solution S, Solution T or Solution NO.* After careful instruction as to self-cleansing of the ear with thin fluffy cotton swabs and the instillation two to three times a day of the preparation, the patient is admonished to return in forty-eight hours. If there has been a severely acute exacerbation, the patient is expected to return the next day. This is also done when the patient comes from out of town and there is haste in the clearing up of the infection.

It is our opinion that it would be better for all of the manipulations in the ear to be done by an otologist. Furthermore, experience demonstrates unequivocally that when the patient is treated every day, he does somewhat better than when he is seen three times a week, and very much better than when he is seen only once a week. Every effort should be made therefore to see the patient as often as is feasible until the infection is cleared or until both patient and physician are convinced that frequent office treatment is not warranted or not possible.

*Solution S—5 per cent sulfamylon in 1 per cent methylcellulose (Winthrop-Stearns).

Solution T—terramycin in polyethylene glycol (Pfizer).

Solution NO—a chemical reaction product of urea, triethanolamine, processed glycerol and an ester of benzoic acid. New Otosmosan (Doho).

TABLE III

CULTURES FROM ACUTE AND CHRONIC OTITIS

1951-1953

GRAM-POSITIVE ORGANISMS	CASES						
	NO.	PER CENT SENSITIVE					
		P	B	S	T	PB	N
Staphylococcus (Coag. +)	388	74	90	72	82	37	98
Staphylococcus (Coag. —)	163	77	86	80	65	42	98
Beta hemolytic Streptococcus	59	78	93	49	81	60	12
Nonhemolytic Streptococcus	149	51	79	84	87	54	36
GRAM-NEGATIVE ORGANISMS							
Aerobacter aerogenes, Escherichia coli, etc.	81	0	0	66	58	65	89
Proteus	89	0	0	64	17	36	92
Pyocyaneus	174	0	0	42	37	73	68

Sensitivities are measured against a standard Staphylococcus strain and standard penicillin reaction.
P — penicillin; B — bacitracin; S — streptomycin; T — terramycin; PB — polymyxin B; N — neomycin.

In forty-eight hours, the report as to the nature of the organism and its sensitivity to various antibiotics is always back from the laboratory. Usually it can be obtained in twenty-four hours. A precise prescription can then be given if necessary. However, the broad spectrum preparations are satisfactory in over 50 per cent of the cases. Consequently, they are usually continued, even if the laboratory shows the organism to be sensitive to one or more other substances. Incidentally, multiple bacteria and multiple sensitivities to a preparation are the rule rather than the exception when there is a gram-positive organism present (table III).

Some patients complain of pain after the instillation of Solution NO. This we have attributed to the glycerin base, because it resembles the pain with instillation of alcohol. Several patients have had a rather annoying bleeding if there were any granulations in the canals or if the middle ear cavity was not protected by thickened epithelium. On the whole, we do not use Solution NO if there is a denuded surface in the ear. In addition, 22 per cent of cases show eczematoid skin sensitivities to Solution NO sooner or later.

Solution S, which was reported before the American Academy of Ophthalmology and Otolaryngology in 1948,[5] has a less broad spectrum than Solution NO, but it is blander on irritated tissues. On the other hand, there is a slightly higher number of eczematoid reactions to Solution S, 27 per cent in this series. Consequently, neither Solution S or Solution NO, which contain sulfa compounds, should ever be used without rigid supervision.

There are fewer local eczematoid reactions to Solution T, less than 3 per per cent in our series. However, Solution T is comparatively unstable in its polyethylene glycol vehicle and therefore the antibiotic must be dissolved immediately before use, either by the physician or the patient. Even in the refrigerator the efficacy of the solution is said to fall off in a week or two. Incidentally, keeping it in the low tempera-

TABLE IV

RESULTS IN CHRONIC EAR INFECTIONS WITH MEDICATIONS USED FOR THIS STUDY

		Number Of Cases	*Percentage Improved*			
			Terra-mycin	Poly-myxin B.	New Otosmosan	Sulfa-mylon
			RADICAL CAVITIES			
Staphylococcus (Coag. +)	Dry	28	31	31	52	16
Hemolytic Streptococcus	Imp.	22	24	31	9	47
	Fail.	32	45	38	39	37
Proteus, Pyocyaneus	Dry	17	40	40	25	34
Escherichia coli	Imp.	22	40	20	33	33
	Fail.	15	20	40	42	33
Nonhemolytic Streptococcus	Dry	12	29	33	33	50
Staphylococcus (Coag. —)	Imp.	10	14	25	42	25
	Fail.	10	57	42	25	25
	Total	168				
			EXTERNAL OTITIS			
Staphylococcus (Coag. +)	Dry	75	70	71	69	60
Hemolytic Streptococcus	Imp.	19	26	14.5	8	20
	Fail.	14	4	14.5	23	20
Proteus, Pyocyaneus	Dry	71	84	86	60	30
Escherichia coli	Imp.	8	9	9	10	0
	Fail.	17	7	5	30	70
Nonhemolytic Streptococcus	Dry	42	92	80	60	0
Staphylococcus (Coag. —)	Imp.	7	8	10	20	50
	Fail.	7	0	10	20	50
	Total	260				
			CHRONIC OTITIS MEDIA			
Staphylococcus (Coag. + and —)	Dry	28	62	34	66	54
Beta hemolytic and nonhemolytic	Imp.	13	19	33	22	38
Streptococcus	Fail.	8	19	33	12	8
Proteus, Pyocyaneus	Dry	26	50	33.3	50	54
Escherichia coli	Imp.	19	33.3	33.3	25	38
	Fail.	21	16.6	33.3	25	8
	Total	115				

All patients had had a discharging ear for at least three months before medication was started. Nine-tenths of the ears designated as dry became so in one month or less. "Imp." indicates marked reduction of secretions and odor. No case was listed as failure unless medication had been used for at least one month.

ture makes it so cold that vertigo is common after its use.

Vertigo from the application of "ear drops" is a fairly serious problem especially in radical cavities and, very especially, in fenestration cavities. In the office and in clinics we therefore tend to use dusting powders and to insist that the patient come for treatment more often than in those cases where he can clean his canal and apply medicament himself.

Skin sensitivity to polymyxin B preparations has, so far, been nonexistent. Furthermore, when the bacteriologic studies show appropriate sensitivities (table III), there seems to be a very high percentage of improvement when polymyxin B is used for Pyocyaneus infections (Table IV). Neomycin has been used for so short a time that although we are optimistic about it, we have not enough data as yet to support our optimism. Out of less than 100 cases we have had two cases of skin sensitivity to neomycin in boric acid powder.

Table IV indicates in a general way the percentage of improvement in three types of otitis with the drugs used sufficiently to be useful for this study. But under no circumstances must the percentages be considered absolute, because they are, of course, colored by the number of patients who have been treated by each medicament, not to mention the unknown factors which always creep into statistics. We have rigidly discarded all patients in whom follow-up notes were equivocal or where the differential diagnosis between external otitis and otitis media was not clear, also all cases of cholesteatoma. We have excluded all cases which had *not* had discharging canals or cavities *for at least three months,* before we started treatment. This accounts for the comparative paucity of cases in some categories. Out of more than 600 charts there were so few neomycin-treated patients with chronic infections, according to the three months' criterion, that we excluded them altogether from the tables. Similarly only one of the 7 cases with Aspergillus niger infection had it for more than three months and she was lost to follow-up after two weeks. It can be seen from the above that the figures must not be construed to have any definite relation to the use of any drug mentioned for acute infections.

It has been our feeling that in addition to the cleansing and the attempt to get the medicament into the area where the disease occurs, it was also necessary to keep it in contact with the skin for a sufficient time, and with this in mind we have experimented with various vehicles. Tentatively, we now feel that the difference between 1 per cent methylcellulose and polyethylene glycol is very slight. We have, however, had a few patients who were sensitive to polyethylene glycol alone; therefore, we tend to use 1 per cent methylcellulose as a vehicle for neomycin as well as for sulfamylon. Polymyxin B is available in commercial preparations,* which we often use for convenience. Prescription preparations are usually acidified with boric acid because we agree with Tremble and Baxter,[8] Fabricant and Perlstein[2] and others that recovery tends to be faster when there is an acid pH.

Our radical cavities have healed and dried very much more quickly since we have routinely used polymyxin B or neomycin with boric acid as a dusting powder postoperatively. Theoretically, because of the multiplicity of bacteria usually found, polymyxin B should be mixed with bacitracin or neomycin. As seen in table III, neomycin and baci-

*Aerosporin (Burroughs Wellcome & Co.)
Polysporin (Burroughs Wellcome & Co.)

tracin still have their best effect on the Staphlococcus, while polymyxin B works best on the gram-negative organisms. Solution S and Solution NO are not included in the table because these preparations do not lend themselves well to the disc method of working out sensitivities. By the tube method, Solution NO caused reduced growth of nearly all strains of organisms and Solution S to about as many.

Nowadays there are often arguments concerning the use of multiple medications. One stand is that since no one antibiotic will cover the entire spectrum of infecting bacteria, we should always use a mixed "blunderbuss" charge, which will hit all types of organisms.

The main trouble with this argument is that if a reaction to the preparation occurs, one has no idea which medication is causing the trouble. In general, there are fewer untoward reactions if multiple medications are not used. The possible exception is with polymyxin B, or with bacitracin, for these medications rarely cause reactions, anyhow.

Terramycin powder seems to have been very efficacious in many patients. We have always used the terramycin powder salt directly. Using it in this way it tends to form a cake of terramycin base, which is a nuisance, especially since the cake is dark brown and resembles exudate. Because of dramatic successes with a straight terramycin salt, we have never diluted it with boric acid powder as we have neomycin and polymyxin B, but we believe that this might be more desirable and should certainly be tried.

We have given up the use of penicillin, sulfadiazine and sulfathiazole alone as topical applications, because of the danger of skin sensitivities and the chance that a patient cannot use the drug for some serious disease process in the future. These medications are always very much better given parenterally. It is probable that more parenteral administrations should be given in patients with chronic otitis media. Full doses of the specific medicament found to inhibit the growth of the organism in the laboratory should be used. The parenteral administration should be continued for several days after symptoms cease.

With long-standing cases, when the patient must go away for the summer or if, for some reason, he cannot be adequately followed, he is given old fashioned 80 per cent alcohol saturated with boric acid to be used as ear drops, because we know that this will not produce local skin eczemas. Often alcohol and boric acid is given prophylactically because it will dehydrate the canal enough so as to carry the patient through a hot, humid season without constant medical attention. Often it will prevent an exacerbation of the otitis from bathing.

As can be seen from table IV we have had fairly satisfactory results with all medications used on the admittedly difficult type of patient selected for this study. Solution S showed results particularly with gram-positive organisms. Solution NO also worked fairly well when the duration of the disease was not great before the medicament was given. In the laboratory this medication has a broader spectrum than any other and can be used even if a fungus is present. However, we have been so successful with the use of sulfanilamide powder with Aspergillus niger that in only one case was Solution NO used with Aspergillus niger, in a fenestration cavity. In this one case there happened to occur pain, vertigo, and discomfort, so that the sulfanilamide powder was immediately substituted. Dry ears and improvement were also obtained with

terramycin preparations, particularly in patients with Pyocyaneus external otitis. There seemed to be little choice between Solution T and the powder, thus they were lumped together. The figures for polymyxin B preparations seem to be the best in all categories, except chronic otitis media.

In conclusion, it must be emphasized that many cases which were listed as dry in one month or less suffered recurrences. These recurrences were often one, two or even five years later. Usually the same infecting organism was recovered. Only occasionally was there a difference in its sensitivities. Incidentally, there has been little, if any, change in the type of infecting organism in the last fifteen years, but more and more strains are becoming resistant to the older antibiotics, notably penicillin. (See table III and Fowler,[3,4] and Davison.[1])

One must reiterate, at this point, that our present methods of management for chronic ear infections are improved but they are still inadequate in a high percentage of cases. Basic research and ideas should lead us to a better solution to the problem. We hope that Drs. Senturia and Fisher will continue to provide even more basic research in this field.

REFERENCES

1. Davison, F. W.: Antibiotics and sinus infections, Tr. Am. Laryng., Rhin. & Otol. Soc., 1950, p. 36.

2. Fabricant, Noah D., and Perlstein, M.A.: pH of the cutaneous surface of the external auditory canal; a study of twenty-seven infants, forty-four children and sixty adults, Arch. Otolaryng., 49:201-209 (Feb.) 1949.

3. Fowler, Edmund P., Jr.: Medicine of the Ear, New York, Thos. Nelson & Sons, 1939, p. 172.

4. ———: The bacteriology of acute otitis media and its course under new and old methods of treatment, Canad. M. A. J., 44:372-380 (April) 1941.

5. ———: Topical applications to the skin of the ear canal, Tr. Am. Acad. Ophth., 53:637-643 (July-Aug.) 1949.

6. McLaurin, J. W.: Principles of therapy in otitis externa, Laryngoscope, 61:66-87 (Jan.) 1951.

7. Senturia, Ben H., and Marcus, Morris D.: Etiologic classification of diseases involving the external ear, Ann. Otol., Rhin. & Laryng., 61:18-32 (March) 1952.

8. Tremble, G. Edward, and Baxter, J. D.: Otitis externa; a controversial subject, A.M.A. Arch. Otolaryng., 56:241-249 (Sept.) 1952.

SUMMARY

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IN THE time allotted, Dr. Senturia has outlined briefly the anatomic and physiologic factors influencing diseases of the skin of the ear canal. He has given much time and thought to this problem, and offers facts to support his opinions. To obtain a better understanding of the various types of external otitis, I think all physicians treating these infections should read the "Etiologic Classification of Diseases Involving the External Ear" by Senturia and Marcus, which appeared in the March 1952 issue of the *Annals of Otology, Rhinology and Laryngology.* Reading this paper drives home the fact that no single magic ear drop, however "broad its spectrum" is suitable for all cases.

Dr. Senturia and Dr. Fowler have rightly stressed systemic factors, correction of which may be more important than local therapy.

Dr. Fisher has given us in a very able fashion a clear description of practical laboratory methods for determining sensitivity of germs recovered from ear canals to the various antibiotics. It must be realized, however, that demonstrating the presence of a germ is not equivalent to proving that it is the chief etiologic agent. The gram-negative rods so often present in large numbers may be saprophytes. Infectious eczematoid dermatitis or a neurodermatitis may be the primary cause. The otologist must interpret the laboratory report in the light of clinical findings, as pointed out by Dr. Fisher.

In my experience careful mechanical cleansing of the canal is more important than local application of drugs or antibiotics. Adequate cleansing necessitates the use of a head light or head mirror over one eye, thin-walled metal specula, small metal suction tips and a compressed air jet. These cannot be properly used through an electric otoscope. I would also add that ear drops are no substitute for an unhurried doctor who has a delicate sense of touch and experience in the use of a pneumatic otoscope. Lacking this equipment and experience in its use, the physician may leave debris on the drum and hence overlook an attic perforation and the cholesteatoma behind it.

I am glad Dr. Fowler started out by stating, "There is no formula which will cure all otic infections," and by listing the factors which make an individual susceptible to external ear diseases. He also stressed thorough cleansing of the canal and the limitation of cotton swabs. I agree with his statement that daily treatment is best. I seldom use ear drops of any type. I have observed numerous allergic reactions to *topically applied* penicillin, streptomycin and sulfonamide drugs, and hence use them cautiously. My instructions regarding treatment of the ear canal can briefly be summarized thus: keep it clean, keep it dry, keep it acid. The metal suction

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tip properly used acts as a curette to remove epithelial debris obstructing the epidermal glands.

I use a compressed air jet to cleanse the anterior angle next to the drum and at the same time dry the entire canal. I follow this with boric acid powder applied with a powder blower and then blow out the excess with the air jet. The air jet is also effective in painlessly cleansing the depth even when the canal is narrow due to marked swelling of its wall. I have the patient use boric acid powder with a hand powder blower at home twice daily. Since I started using this method most of my radical mastoid cavities have become dry in six to eight weeks. One patient who had a fenestration done elsewhere had a wet cavity for six years following operation. The use of boric acid powder dried up the cavity in two weeks and it has remained dry since.

Again quoting Dr. Fowler: "Our radical cavities have healed and dried very much more quickly since we have routinely used polymyxin B or neomyxin with boric acid as a dusting powder postoperatively." In the light of my experience, I cannot help raising the question whether the rapid healing which he observed was due to boric acid or to *avoidance* of solutions rather than to the specific antibiotic action of the powder.

If the physician wishes to use antibiotics or sulfonamide drugs, he should be on the alert to detect allergic reactions. Dr. Fowler's observation of 22 per cent and 27 per cent occurrence of contact dermatitis to two sulfonamide preparations raises the question, "Should the topical application of sulfa drugs be discarded entirely?" I think so, and this is the opinion of many dermatologists.

To summarize briefly, external ear infections can best be treated by an otologist who is also a good physician, who considers predisposing factors such as diabetes, obesity, hypothyroidism, allergy, the daily habits of his patient *and* his emotional problems.

Symposium: Medical Management of Dizziness

THE IMPORTANCE OF ACCURATE DIAGNOSIS

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WHILE this symposium is concerned with medical management of dizziness, my remarks will not be directed to definitive treatment. I shall leave discussion of that to the other two participants who are well qualified in this field.

However, I should like to emphasize the fact that effective treatment depends on accurate diagnosis. In the treatment of dizziness more mistakes are made because of incorrect diagnosis than because available therapeutic agents are lacking. A salt-free diet, nicotinic acid, or histamine will not give relief to the patient said to have Ménière's disease if he does not actually have Ménière's disease. Similarly, acute toxic labyrinthitis will clear with any form of treatment, or none at all, unless the physician, in his enthusiasm "to do something," overtreats the patient.

Dizziness is a symptom, not a disease. In some instances its cause is apparent from the "textbook" pattern of the history given by the patient. In others, the history is confusing and the cause of the dizziness is obscure unless the physician has in mind a classification of all the possible contributing factors. Such a classification enables him to recognize certain symptom complexes and, by consequence, to treat them adequately.

It is well to recall that a complicated system controls orientation of the body in space. This includes the eyes, the proprioceptive system, the labyrinth or statokinetic system, and the cerebellum as well as the cerebrum, since dizziness is a conscious symptom. By the word "labyrinth" I mean the end organ, the vestibular portion of the eighth cranial nerve and the vestibular nuclei.

When function of any of the parts mentioned is disturbed dizziness may ensue. The patient may then experience a sense of motion. But he may have a sense of giddiness, weakness, confusion, unsteadiness, insecurity, or other sensations which he is unable to describe adequately. Exactly what he means should be determined by a carefully taken history. If it is complete and accurate enough, the history will indicate (1) whether there is or is not a sense of motion; (2) the pattern of the dizziness; (3) the degree of its severity, and (4) whether hearing loss or tinnitus is also present.

Too often the physician assumes there must be a sense of motion if the patient is dizzy. Therefore, hurried statements by the patient should be carefully evaluated with the purpose of determining, if possible, whether there is a sense of motion. If a sense of motion cannot be proved by questioning, the entire body becomes the field for investigation. If there is true whirling or a sense of motion, and if one accepts the premise that vertigo arises only from the statokinetic system, the field of investigation is narrowed. It makes no difference in what direction the motion takes place.

It is also important to discover whether the sensation is continuous or paroxysmal. Paroxysmal attacks bring to

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mind such specific conditions as Ménière's syndrome, cardiac disease, or epilepsy. Continuous dizziness may indicate conditions such as anemia, posterior fossa tumor or eye muscle imbalance. If a definite pattern can be worked out, the diagnosis is often established. If a definite pattern cannot be worked out, the physician is again faced with investigation of the entire body.

Unsteadiness or lightheadedness may indicate arteriosclerosis, hypoglycemia, or other general metabolic disturbances. Severe whirling vertigo with nausea and vomiting should always direct attention to diseases of the end organ, the eighth nerve, or the central nervous system.

If hearing loss or tinnitus or both are present, diagnosis may be easier. Hearing loss and tinnitus are more likely to occur with whirling vertigo than with other less well-defined sensations.

The following objective findings are of help in making an accurate diagnosis:

1. *Spontaneous Nystagmus.* If this can be demonstrated, attention should immediately be focused on the end organ, eighth nerve, brain stem, or higher centers of the central nervous system. Putting plus 20 lenses over the eyes, examining the fundi with an ophthalmoscope, and placing the patient in different positions may bring out a fine or a latent spontaneous nystagmus which would otherwise have been missed.

2. *Disturbances in Hearing.* An audiogram should always be done, particularly in view of the fact that few otolaryngologic offices today are without an audiometer. Occasionally it will point to defects when there is no subjective complaint of hearing loss. However, we must not forget that diagnoses were made before the audiometer was invented. There is no need to let our tuning forks gather dust and mold in the bottom drawer.

3. *Labyrinthine Function.* The Kobrak caloric test makes it possible to test labyrinthine function quickly in the office. When properly used, it allows minimal stimulation of the labyrinth and thus permits an approximation of the threshold of sensitivity of each ear separately.

Although normal responses do not rule out disease of the labyrinth and the eighth nerve as the cause of dizziness, detection of abnormal responses may be of great help. Nevertheless, the otolaryngologist must be careful not to place too much emphasis on minor deviations in response. Each physician must standardize his own caloric testing, regardless of what technic he uses. Head position, temperature of stimulating solution, and duration of stimulation should be constant in his hands from one patient to the next. We all know that response to caloric stimulation varies widely in different persons and even in the same person at different times. Therefore, only definite hyperactivity, hypoactivity, or absence of response to caloric stimulation is significant. Perversion of the expected response should direct attention to the central nervous system.

If spontaneous nystagmus, loss of hearing, and disturbed caloric response are elicited in a given patient, diagnosis is made easier. If they are not, there may still be disease of the central nervous system or the statokinetic system. But in the absence of such findings it is more likely there is no such disease and attention should shift to other systemic conditions which may produce dizziness.

In these preliminary remarks I do not have time to mention all the conditions which may give rise to dizziness. Many of the more common ones will be brought out by Dr. Selling. However, I can generalize a little.

True vertigo with a sense of motion can be produced by disorders of the external and middle ear. Primarily, these result from infection, trauma, or al-

lergy. Examination of the ear will usually demonstrate some abnormality. Severe vertigo, which rises to the level of inability to stand and is accompanied by nausea and vomiting, occurs in irritation or destruction of the internal ear or brain stem. Hydrops of the labyrinth, acute toxic labyrinthitis, hemorrhage, severe vasospasm, fracture through the labyrinth, or multiple sclerosis should be considered when the patient complains of severe vertigo.

Central nervous system disease may produce any type of dizziness. But when the disease is beyond the statokinetic system it is more likely to produce slowly progressive dizziness rather than sudden or recurrent violent attacks. Tumors of the cerebellopontine angle give rise to slowly progressive tinnitus, hearing loss and ataxia and not to sudden attacks of vertigo. There is no similarity between this type of disturbance and that of labyrinthine hydrops.

Vague continuous or paroxysmal dizziness, in which a real sense of motion cannot be discovered by careful questioning, can be caused by disease in almost any other part of the body. The most common organic causes are disturbances of the eyes, the proprioceptive system, and the circulatory system. Paroxysmal attacks, in some instances erroneously labeled Ménière's disease, can be caused by hypertension, Stokes-Adams disease, paroxysmal auricular fibrillation, carotid sinus sensitivity, hypoglycemia, and other metabolic deviations. The habit of requiring a triad of paroxysmal whirling vertigo, fluctuating hearing loss and tinnitus before making the diagnosis of Ménière's disease will lead to fewer diagnostic errors in this group.

Anemia, malnutrition, and drug sensitivity may give rise to dizziness. Drug sensitivity is important. Sometimes it seems we are becoming a nation of "pill takers." At least, many people take some medication at frequent intervals whether advised by the doctor, the druggist, or television. It will often be of as much help to find out what the patient is taking by mouth or by injection as it is to determine what disorders he has.

Endocrine disturbances, either spontaneous or induced by estrogen administration, frequently cause dizziness, particularly in the patient with motion sickness.

And, finally, there is a large group of patients whose dizziness is one symptom of functional disease.

Although by no means complete, the disturbances I have enumerated indicate the wide scope of possibilities which must come to mind when investigating dizziness as a symptom. They also indicate that examination of the eyes, blood pressure determination, blood counts, neurologic investigation and, occasionally, roentgenograms and special studies, such as glucose tolerance tests, may aid us in more accurate diagnosis.

In summary, accurate diagnosis is important in the management of dizziness, and accurate diagnosis is often possible if the physician will remember the following precepts:

1. Understand the various mechanisms by which dizziness can be produced.
2. Have in mind a specific list or, better if possible, an organized classification of those diseases, both organic and functional, which give rise to dizziness.
3. Take time to get a detailed history.
4. Know what laboratory findings are of value and how much emphasis to place on them.
5. Do not focus all your attention on one area of the body, such as the ear, and disclaim knowledge of other conditions producing dizziness.
6. Seek adequate consultation from physicians outside your specialty.

Symposium: Medical Management of Dizziness

THE INTERNIST'S APPROACH

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BY INVITATION

IN ALL medicine, treatment is dependent on accuracy of diagnosis. The two fields dovetail so closely that it is at times impossible to discuss one without some reference to the other.

For the purpose of our discussion, dizziness can be considered according to whether it is caused by (1) impairment of peripheral structures; (2) lesions of the central nervous system; (3) various systemic diseases; or whether it is (4) an expression of the anxiety tension state.

DIZZINESS ARISING FROM IMPAIRMENT OF PERIPHERAL STRUCTURES

Ménière's Syndrome

Dizziness arising from involvement of peripheral structures is most common in Ménière's syndrome and toxic labyrinthitis. As otolaryngologists, you are thoroughly familiar with Ménière's syndrome. Nevertheless, it may be worth while to outline our general approach to treatment.

Up to the time dramamine was introduced, the treatment of choice was the salt-free, or Furstenberg, diet. In my experience it is still the treatment of choice in spite of the fact that it requires considerable self-sacrifice and self-control on the part of the patient. But there are limitations to its use. Unless the attacks are severe enough, or frequent enough, to interfere with the patient's occupation or his enjoyment of life, he should not be asked to undertake it. There is such a thing as the cure being worse than the disease. But where attacks are severe, frequent and disabling, the diet is well worth trying.

Certain points about the plan require emphasis. The patient must be made to realize the importance of following the schema in detail. To get his cooperation I find it wise to take a little time to explain to him something of our sense of equilibrium—its anatomic basis, its physiology, and how function is disturbed in Ménière's disease. And I explain what the diet is supposed to accomplish. If he understands the "whys," or as much of them as we understand, he is more likely to follow through with the recommendations.

After outlining the treatment, the patient should be warned that the effects may not be felt at once. It may require several weeks before the maximum benefit is obtained. During this period it is important to keep contact with him by office visit, if he is nearby, or by letter, if it is inconvenient for him to come in. If this is not done, he is apt to grow discouraged and give up the treatment. We always hope for immediate results, but we must not expect them. And we must not allow the patient to expect them.

A useful, and often necessary, adjunct to the diet is ammonium chloride. This should be given in capsules, not in pill form. Pills too often pass through the bowel unchanged and rattle uselessly against the toilet bowl. The usual

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dose is 6 gm. (12 capsules) three times a day for three days, followed by a rest period of two days. To avoid upsetting the digestion the capsules should not be taken all at once but scattered through the meal. Even so, they are not pleasant to take, and the patients look forward to their capsule-free days. It helps to maintain their morale.

The patients should be warned against the use of sodium-containing substances other than sodium chloride, such as bicarbonate of soda (which they tend to use to counteract the queasiness caused by the ammonium chloride) and sodium barbiturates, which are so indiscriminately used these days. And over and over again, the patients must be encouraged. The attitude of the physician can help a lot.

The advent of dramamine has been a blessing to many of these patients. In contrast to the salt-free diet, its use is simplicity itself. Fifty milligrams four times a day, and occasionally 100 mg. four times a day, may give profound relief and even complete freedom from attacks. Dramamine has the disadvantage of causing drowsiness. For some this may be so marked as to rule out its use. And there are occasional other unpleasant side effects. But even when dramamine is well tolerated, relief may be only partial. Some patients have an initial good result which soon wears off.

Banthine, a relative of dramamine, prescribed in the same dose, has given good results in some cases. It may also be used in the form of probanthine, 15 mg. three times a day before meals. The unpleasant side effects are somewhat similar to those of dramamine.

Much has been said and written about the use of histamine in Ménière's disease. The diphosphate given intravenously, 2.75 mg. in 500 to 1,000 cc. of 5 per cent glucose solution over a period of one-half to one hour, is sometimes immediately effective in stopping an attack. But no matter how given, I have not found it effective in diminishing the frequency or severity of attacks over the long term.

For the group of patients whose attacks are not severe enough to justify the use of the salt-free diet or of dramamine, I have found nicotinic acid worth while. Some who favor its use give it subcutaneously. If this is done the patient should be taught self-administration. I prefer to give it by mouth, in ascending doses. I start with 50 mg. three times a day for two weeks, then I give 50 mg. four times a day for two weeks, then 100 mg. three times a day for two weeks, and finally 100 mg. four times a day. If this treatment is effective, I instruct the patient to continue it, using 100 mg. four times a day for the first three weeks each month.

This ascending dosage has an important value. It keeps the patient sufficiently interested in the successive changes to carry on with the treatment long enough to give it a chance to do its work. As to the "why" of its effectiveness, the current explanations are not too impressive. But because it sometimes helps, it is worth trying.

In the occasional patient who gets no benefit from medical treatment and whose condition is disabling, cauterization of the membranous labyrinth may give a brilliant result.

Toxic Labyrinthitis

The most common form of dizziness of peripheral origin is the so-called toxic labyrinthitis. Perhaps the simplest example is the combination of dizziness and tinnitus which may follow administration of quinine or salicylates.

Toxic labyrinthitis may occur in the course of many infectious diseases. It is common in upper respiratory infections and in the so-called "flu." It may also occur with focal infections and with various toxic states. When, as often

happens, it comes suddenly, it is a frightening experience to a patient. The intense dizziness, the nausea, the vomiting, and the tinnitus make him feel that something terrible has happened and that he is headed for disaster.

At this stage dramamine may be helpful, but the most important element in treatment is the reassurance you can give him by explaining the meaning of his symptoms and the outlook for recovery. These patients get well. In most cases the attack is brief, lasting only a few days. Sometimes it continues for a number of weeks, with the intensity of symptoms gradually lessening. In presenting this problem to medical students, I have always suggested that an effective treatment is a saturated solution of potassium iodide, taken 1 drop three times a day in a little water. Almost always the patient gets well before the 1 oz. bottle is empty.

Dizziness of peripheral origin may also result from vascular disease. The auditory artery (antero-inferior cerebellar artery) is an end artery which runs a relatively long course and furnishes much of the blood supply to the cochlea and labyrinth. Sclerotic changes in this vessel, or occlusion of one of its branches, may give a symptomatology like that of toxic labyrinthitis, and it is not always easy to distinguish them. In these states such drugs as priscoline, theobromine with phenobarbital, or aminophylline may be useful.

The most severe of these vascular disturbances is labyrinthine hemorrhage. Fortunately, it is rare, but when it occurs it is extremely dramatic and violent. The roaring is intense, the vertigo is so severe the patient cannot lie in bed without holding on, and the nausea and vomiting are severe and persistent. Benadryl up to 100 mg., administered intravenously, may be of real value. But, by and large, the symptoms continue in spite of treatment. Gradually, in the course of three weeks, they subside spontaneously, leaving unilateral deafness as the single symptom of the disaster.

DIZZINESS DUE TO LESIONS OF THE CENTRAL NERVOUS SYSTEM

Cerebellopontine Angle Tumor

In discussing the diagnosis of dizziness, acoustic neuroma, or cerebellopontine angle tumor, is always given considerable prominence. While it is well to consider this tumor, it is also well to remember that it is not common. Brain tumors as a whole are not too frequent. Cerebellopontine angle tumors represent only 9 per cent of brain tumors. Furthermore, dizziness is neither the outstanding nor the earliest symptom. True systematized vertigo is uncommon. The diagnosis is dependent on neurologic examination, but the otolaryngologist may point the way by demonstration of a unilateral hearing loss associated with homolateral loss of caloric responses. When your suspicion is aroused in such a case, testing the corneal reflexes may be of great help. Homolateral loss of the reflex is strong confirmatory evidence. Treatment is surgical.

Multiple Sclerosis

This is another disease of the central nervous system which has to be considered in the diagnosis of dizziness. It runs a long course, usually many years, with exacerbations and remissions. Early in the course of the disease attacks may be mild and brief. But gradually they increase in severity and duration and leave permanent residua.

The brain stem is a predilection site for the sclerotic plaques of multiple sclerosis. The vestibular pathways traverse the brain stem. Hence, dizziness, and often true vertigo, is a frequent symptom. But it is only one symptom. A great many nuclei and pathways (both

ascending and descending) are crowded into this area and may be damaged by the sclerotic patches. Thus, many symptoms may develop. It is the multiplicity of signs and symptoms, along with their tendency to wax and wane, that gives the characteristic picture of the disease. Multiple sclerosis is always considered in diagnosis of dizziness, hoping to rule it out. Once the diagnosis is made, treatment can at best be palliative.

Miscellaneous Lesions

Any other lesion that affects the brain stem may cause dizziness or vertigo. Supratentorial tumors may do so through increased intracranial pressure and a pressure cone. Posterior fossa tumors may do so by direct pressure. And, obviously, infiltrating tumors of the brain stem may injure the appropriate pathways.

Vascular lesions associated with hypertension or arteriosclerosis affect branches of the vertebral or basilar arteries and cause brain stem syndromes.

Of all the vascular lesions, thrombosis of the postero-inferior cerebellar artery gives the most striking picture. The patient suffers sudden vertigo so intense that the whole world seems to be flying to pieces. Vomiting is intense and persistent. In contrast to labyrinthine hemorrhage, tinnitus and hearing loss are absent. The neurologic findings are characteristic and the diagnosis is usually clear.

For the one case of this type in which the whole of an important artery is affected, there are dozens of cases of dizziness or vertigo caused by less extensive vascular change in the vertebral and basilar arteries and their branches.

Treatment of these vascular lesions must be directed toward the underlying disease. Drugs, such as theobromine with phenobarbital, or aminophylline with phenobarbital, may be useful. And where a severe hypertensive state underlies the vascular changes, some of the newer drugs, such as raudixin and apresoline, may be of great value.

Cerebral Contusion and Cerebral Concussion

Two other conditions in which dizziness is of relatively frequent occurrence are cerebral contusion and cerebral concussion. In cerebral contusion the picture is fairly clear. Contusion readily damages the brain stem, causing edema and multiple small hemorrhages. By the laws of chance, the vestibular nucleus and its central pathways must often be involved in the process. Treatment of the dizziness is simply treatment of the brain injury. The end result depends on the severity of the injury.

In concussion the problem of diagnosis is not so simple, largely because compensation factors are so often involved. Following even mild head injuries many patients complain persistently and bitterly of intense headache and dizziness. The dizziness is not systematized. These symptoms may be a direct result of the trauma. But often, and I believe this includes the major portion of the group, they are the result of a compensation neurosis or of an anxiety tension state.

Often these patients are referred to the otolaryngologist to determine whether the dizziness is "real," that is, whether it is the result of organic central nervous system damage. He tests the hearing and labyrinthine reactions. If he finds changes that represent the end result of trauma, his report can be of great help in evaluating the case. If the tests are normal, the situation is not so simple. He has nothing to go on but the history of the injury and the subjective complaints. The internist or neurologist is faced with the same difficulty. I know of no group of cases in which the questions of an organic state versus a functional state or an organic state versus

compensation neurosis is more difficult. Actually, the decision depends largely on evaluation of the history, the make-up of the patient and the observation of his attitudes during the examination. And when you have made your decision, you usually wonder whether it is right.

If the patient has brain damage, time is the most important factor in treatment. If he has a compensation neurosis, settling the compensation angle one way or another is essential.

DIZZINESS CAUSED BY VARIOUS SYSTEMIC DISEASES

The list of systemic diseases causing dizziness is long, and we can consider only a few.

Cerebral anemia causes dizziness. Obviously, cerebral anemia may have many causes. These include blood loss and the various blood dyscrasias. An interesting group is that in which there are brief attacks of dizziness as a result of recurrent episodes of such anemia. Stokes-Adams syndrome may serve as an example. Here there is partial or complete heart block. If the attack is short, lasting two or three seconds, dizziness may be the only symptom. If the duration is a little longer, there is syncope. If it is still longer, there may be convulsive seizures. The same situation can develop in aortic stenosis, in paroxysmal auricular tachycardia at the onset of the attack, in postural hypotension, and with a hypersensitive carotid sinus. When a patient complains of brief, recurrent attacks of dizziness, each of these conditions has to be considered. Adequate treatment depends on diagnosis. This is a problem for the internist.

Certain endocrine disorders, especially hypoparathyroidism, hyperinsulinism, and the menopausal state, may also cause transient episodes of dizziness. In hypoparathyroidism attacks of tetany occur. The patient complains of dizziness along with numbness and tingling of the hands, feet and, often, about the lips. He may show the characteristic carpopedal spasm. The same symptoms may occur with tetany caused by hyperventilation or alkalosis. With hyperinsulinism there may be attacks of nervousness, tremulousness, dizziness, syncope, and, when the blood sugar drops very low, convulsions. I recall one case, referred to Dr. DeWeese as Ménière's syndrome, in which he made and proved the diagnosis of hypoglycemia. It is important to remember that in either tetany or hypoglycemia recurrent attacks of dizziness may be the sole symptom. This, again, is a problem for the internist.

Recurrent attacks of dizziness are a frequent complaint of patients with the menopausal syndrome. Considering the vasomotor instability that may occur during the menopause, this is not surprising. On the other hand, administration of the estrogens, which we use so indiscriminately and often with so little reason, may also cause dizziness. It is always wise to ask dizzy patients what medicine they are taking!

Epilepsy may seem a far cry from the field of the otolaryngologist. But as long as he interests himself in problems of dizziness, patients with this disease will appear in his office. The patient with grand mal attacks presents no difficulty—the major epileptiform seizure is too striking to be missed. But that does not hold for the other two seizure types, the petit mal and the psychomotor.

Many patients with petit mal epilepsy have "dizzy spells" as their sole complaint. A careful history will show that the attacks are episodic, that they are brief, and that they are accompanied by some degree of clouding of consciousness. An electroencephalogram

and, perhaps, a therapeutic trial of tridione or paradione will help determine the diagnosis.

Psychomotor seizures may be more difficult to recognize. The attacks are not as uniform as the petit mal attacks, and not as brief. But here, again, dizziness or vertigo may be a prominent symptom. This is not surprising when we consider that most psychomotor seizures arise from foci in the temporal lobe. A careful history, bringing out the facts that the attacks are episodic, accompanied by clouding of consciousness, and followed by amnesia for the event will go far toward making the correct diagnosis. The electro-encephalogram, especially a sleep electroencephalogram, and a therapeutic trial of sodium dilantin and phenobarbital will help confirm it.

It has long been regarded that there is a relationship between migraine headaches and Ménière's syndrome. Each of these conditions occurs in episodes which are recurrent, limited in time (rarely over twenty-four to forty-eight hours) and followed by intervals of complete freedom from distress. Of the two, migraine is far more common and begins earlier in life. Ménière-like attacks may occur with the headache attack or independently. That the two may be separate entities in the same patient is obvious. But the association of the two is too common to allow such an explanation for all cases. There is no question that dizziness, or vertigo, may occur on the basis of migraine, whatever migraine is.

In such cases the treatment of choice will be the treatment for migraine. We can often stop the acute attack with cafergone by mouth or ergotamine tartrate subcutaneously if these drugs are administered early enough. But over the long term, no treatment is wholly satisfactory. It would take us too far afield to discuss it here. But I should like to emphasize that one of the important factors in treatment is a frank discussion with the patient of the migraine headache, its life history and its prognosis. He will worry less and be more at ease if he understands what it is all about.

In all discussions of dizziness in general and of Ménière's syndrome in particular, we find reference to the role of allergy as a possible etiologic factor. There is no reason to doubt that allergy, which causes edema elsewhere in the body, can cause it in the labyrinth, eighth nerve and brain stem. Scattered through the literature are case reports in which a specific allergen, such as milk, has caused recurrent vertiginous attacks. Such cases are unusual. Common experience indicates that allergy, as we commonly understand the term, is seldom the cause of Ménière's syndrome. By and large, the time-consuming and expensive testing required does not often justify itself. In the vast majority of cases the results are negative or equivocal. Even when they are positive and the patient follows the prescribed dietary restrictions or desensitization programs, the results are generally disappointing.

In recent years there has been much interest in physical allergy as a possible causative factor in Ménière's syndrome. Dr. H. L. Williams is particularly impressed with this relationship. He has expressed the belief that the various types of treatment which have proved effective in the syndrome, in general those which I have outlined, owe their effectiveness to the influence they have on the autonomic dysfunction associated with the allergic state. This may prove to be correct, but the evidence in its favor still leaves a good deal to be desired.

Dizziness or vertigo is the dominant symptom in two other conditions:

(1) motion sickness and (2) postural vertigo.

Motion sickness is, by and large, a constitutional disorder, usually dating back to childhood. It shows itself in the tendency to dizziness, nausea and vomiting in swings or in merry-go-rounds; it may occur in travel by automobile, rail, air and, frequently, by sea. A patient with this tendency may have major dizzy spells as a result of even minor labyrinthine irritation. Dramamine, in doses of 50 mg. to 100 mg., three times a day, is almost specific. When a patient with such a tendency is about to travel, he should begin his medication an hour in advance of the starting time.

With postural vertigo the situation is less clear. There is a question whether it is closer to induced vertigo (i.e., that produced by testing) or to spontaneous vertigo. I believe it is a form of spontaneous vertigo, indicative of disorder within the statokinetic system not severe enough to appear on its own, but requiring a little "kick" (posture change) to make it manifest. I believe this because I have observed postural vertigo in association with almost any of the situations in which spontaneous vertigo arises. By and large, postural vertigo is a benign affair and symptoms generally clear without treatment. This is what one might expect if he accepts the explanation that postural vertigo represents a mild upset of the statokinetic system. While waiting for the symptoms to clear the patient needs encouragement and reassurance more than medicine.

DIZZINESS AS AN EXPRESSION OF THE ANXIETY TENSION STATE

The anxiety tension state is, in my experience, the most common cause of dizziness. The reason is simple. People who have an anxiety state as the sole or major source of their trouble represent the largest single group that comes to the doctor for treatment or advice. At least 30 per cent of all our patients fall in this group. Many of them give dizziness as their main complaint.

Questioning will bring out the fact that what the patient means is not vertigo, not whirling, but something different. He has a sense of imbalance, a sense of insecurity, a feeling of queerness, an indefinite sense of something wrong. But he has other symptoms as well. He will tell you about his palpitations, his gas, his sour stomach, his shortness of breath, his chest pains, his exhaustion, his loss of memory, his nervousness, and his insomnia.

Once he starts his story, it all comes tumbling out. As often as not the dizziness, with which he started, gets lost in the confusion. The more you inquire about it, the vaguer it grows. It shifts to a blurriness of vision, a faintness, a sense of blackness. This shifting character, this lack of definiteness, and the multiplicity of the complaints are most helpful in guiding us to the diagnosis.

In handling this group of patients the otolaryngologist is, I believe, somewhat backward in assuming his proper responsibility. After finding that the hearing and the labyrinthine responses are normal, he is too apt to say to the patient, "This is not my field," and let it go at that. Sometimes a negative report is all you can give. But often on the basis of the type of history I have just outlined you can satisfy yourself that this is an anxiety state you are dealing with. Why not accept the responsibility of saying so? It is particularly important when the patient comes to you directly, not referred by another physician. Perhaps you will want to send him to an internist or to a neurologist and shift the responsibility in that way. Sometimes this is necessary. But when the

diagnosis is obvious, instead of letting him go away confused and worried, take the few minutes necessary to tell him not what *isn't* wrong with his inner ear, but what *is* wrong with him.

It is not hard to explain to a patient that tension gives rise to feelings of uncertainty and insecurity and that those feelings may appear to him as dizziness. It is not hard to explain to him the innocuousness of his trouble and the absence of any serious underlying disease. Obviously, you will not help all these patients. But if you take a little time, and make the effort, I think it will surprise you to find how many of them leave your office relieved and comforted instead of apprehensive and worried and feeling that some dreadful disease is hounding them.

Throughout this discussion I have said much about the need for explanation and for reassurance. It is fundamentally important in the work of the physician. In spite of all the advances in medicine in recent years, there remain many patients whom we cannot cure. But even among these are many whom we can help along the way. It still remains one of the important functions of the doctor to send the patient away feeling a little better and a little happier.

Symposium: Medical Management of Dizziness

PHARMACOLOGY

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THE preceding speakers have discussed the complexity of causes and difficulties in differential diagnosis associated with the symptoms of vertigo and dizziness. These considerations assume paramount importance in the choice of therapy; by way of example, when someone sits on a thumbtack, a pair of pliers is used, not a syringe loaded with 10 mg. of morphine. In my brief discussion today I will limit my remarks to the reasons behind medical therapy of vertigo and dizziness.

The basis for specific therapy of Ménière's syndrome or Ménière's disease resides in the pathologic studies in 1938 by Hallpike and Cairns who demonstrated the gross dilation of the endolymphatic system, coining the useful term "endolymphatic hydrops."

Shortly thereafter (1941) Miles Atkinson ascribed to certain patients with Ménière's disease an action of histamine in dilating capillaries and altering their permeability, thus provoking endolymphatic changes. In those patients responding with an excessively large wheal and flare to 0.01 mg. of histamine given intradermally, gradually increasing doses of histamine provided relief of the Ménière symptoms—presumably on a basis of "desensitization" to histamine. The effectiveness of histamine has been confirmed by others, and Rainey and Williams report its successful use in all patients whether or not skin testing shows marked sensitivity to histamine.

Several points in the histamine theory, however, seem irreconcilable with present-day knowledge. Our current concept of allergy is based on a reaction between an allergen and a sensitizing antibody yielding a histamine-containing toxin. Antibodies are formed in response to antigens and react with them to prevent the release of histamine. It would be surprising indeed to be able to form an antibody to the end process (histamine) of the allergic process. Indeed such seems to be the case. In neither animal nor man is there an increased tolerance built up with increasing doses of histamine; the flare and wheal does not decrease in size. Richtner reported that blood histamine values are the same in controls or patients with Ménière's disease: 0.045 mg. per milliliter. Finally, the antihistamines are now commonly used for the allergic patient but have not met with any spectacular success in the treatment of Ménière's disease.

A possible mechanism of action for histamine is that it provokes the release of some physiological humor-adrenalin, nor-adrenalin or the adrenal steroids. If such be true, then histamine therapy should be given in maximum tolerated doses and not with the vain hope of any desensitization.

It has been suggested that in Ménière's syndrome an arteriolar spasm of end arteries in the membranous laby-

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rinth results in a passive dilation of the capillary venule network distal to the spasm. In the distended loop there may be sludging of blood, liberation of toxic metabolites, hypoxia of vessel walls and increased capillary permeability leading to tissue edema and increased accumulation of endolymph. Depending on which vessel or vessels are involved, the patient may experience primarily vertigo, hearing loss, tinnitus or a combination.

With this viewpoint in mind, several therapeutic measures might be adopted. Nicotinic acid in doses of 50 mg. three times a day to 100 mg. four times a day does provide visible vasodilation, particularly in the face and neck area. A more intense action is to be had following the parenteral administration of nicotinic acid: the dose (25 to 100 mg.) being adjusted between that provoking an intense flush and the accompanying discomfort from vasodilation headache. About two thirds of the patients so treated experience relief — primarily from vertigo, the hearing loss and tinnitus responding less well. Moreover, favorable results in aborting an acute attack are easily obtained but maintenance of absence of symptoms much more difficult.

Nicotinic acid is perhaps too selective in its vasodilation or reduction of blood vessel spasm. In peripheral vascular disease good relief is obtained in cutaneous disorders, but none if deeper vessels are involved. Similarly, nicotinic acid has been found in experimental studies to increase blood flow in the skin but not in deeper muscle tissues.

The end artery spasm in Ménière's disease may well be caused by excessive sympathetic nerve activity. Discharge of sympathetic nervous centers causing end artery spasm are more clearly indicated in the vasomotor syndrome of the inner ear. As a corollary, adrenergic blocking drugs or sympatholytic drugs would be effective. Anderson and Reed used with success the sympatholytic drug, hydergine (a mixture of dihydrogenated ergot alkaloids). Other stronger sympatholytics might be used but they often provoke dangerous falls in blood pressure, particularly in ambulatory patients. Dr. Edith Simandl, anesthesiologist at the University of Vienna, uses hexamethonium to control vertigo in the postfenestration patient as well as during the operation to allow a bloodless field.

The therapy of Ménière's disease on the basis of an alteration in fluid and ionic balance is attributed to Mygind and Dederding, 1931. Favorable results may be obtained by dehydration with the use of diuretics, particularly ammonium chloride. Politzer, in 1893, prescribed pilocarpine to increase water loss by sweating. Salt-free diets (Furstenberg's technic), lowering the sodium ion content, and conversely, the administration of potassium chloride, provide different means to the same end.

It is possible that this type of therapy is based on an alteration of hypersensitive nerve structures, for it can be shown in electrophysiological studies on isolated nerves that reduction in the external sodium ion concentration bathing the nerve results in anesthesia, and conversely, an increase in the external potassium will result in a decrease of nerve action.

Such an attack is, however, a gross action of altering total body sodium and potassium when localized changes in the petrous bone are desired. It is not without danger, particularly in myocardial depression where there is excessive potassium. We should like to restore the lymphatic membrane to normal permeability for sodium and potassium, but unfortunately we do not know how to achieve this goal.

When no cause for the symptoms of vertigo and dizziness can be discovered,

nonspecific therapy must be employed. Following the successful use of dramamine in motion sickness, it was applied to the control of nausea and vomiting in fenestration operations and a relief of vertigo was obtained. Dosage is usually 200 mg. at once, followed by 100 mg. every three hours. A variety of reports attest to its effectiveness in vertigo and dizziness from various causes, although it may be necessary to increase the dose above that mentioned. (Increases in dosage will be accompanied by drowsiness and stupor.)

Since the relief of vertigo and dizziness are subjective experiences, attempts have been made to demonstrate an action of dramamine on objective findings—nystagmus. In 1951, Gutner et al. reported that it prolonged the onset and decreased the duration of nystagmus. A variety of means for provoking nystagmus may be used: the caloric test, the Bárány chair or electrical stimulation of the mastoid. Other authors have been unable to confirm these findings. Winston, using subjects sensitized by morphine and whirled in a Bárány chair, found that dramamine did not alter nystagmus but did prevent vertigo, nausea and vomiting.

It should be pointed out that dramamine is composed of an almost equal mixture of benadryl and 8 chlorotheophylline, and the latter cannot be demonstrated to have any pharmacological action; neither diuresis, central nervous system stimulation or significant alteration in vertigo, nystagmus or nausea and vomiting. Benadryl hydrochloride, being water-soluble, may be used intravenously and good results have been reported in the control of vertigo by Campbell in postfenestration patients and by DeWeese in Ménière's disease and acute labyrinthitis. Other antihistamine drugs, currently being investigated for antimetic properties, may prove even more effective with less drowsiness.

The locus of action for oral dramamine or parenteral benadryl lies in the brain stem reticular formation. It is in this area that the vomiting center is located and Spiegel and Sommer state that the vestibular nucleus is connected to this substantia reticularis. More precisely, B. Gernandt finds that these drugs block at the reticular level the effects of labyrinthine stimulation, which, beyond the reticular formation, discharge the vagus and glossopharyngeal structures (among others), and prevent the subjective nausea, vertigo and dizziness and the objective cardiovascular findings.

The mechanism of action appears to be a central atropine effect of dramamine and benadryl. The reticular formation is composed of cholinergic fibers, and Himwich, using the cholinesterase poison D.F.P., produces vertigo and nystagmus and contraction of the pupil on the homolateral side of injection with turning of the animal's body. These are antagonized by atropine or dramamine.

DIFFERENTIATION AND TREATMENT OF ECZEMAS OF THE EYELIDS

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THE emphasis that has been placed on contact allergy as the cause of eczematous dermatitis has tended to make physicians less alert to the fact that other types of eczematoid dermatitis, often very similar in appearance, do occur and must be differentiated if therapy is to succeed. In fact, in certain locations, such as the eyelids, these eczematoid reactions which are not due to contact allergy frequently assume great importance, especially in the chronic types of inflammation. The recognition of the various entities group under the still useful term "eczema of the eyelids" requires complete study of the patient, including a thorough history and general physical examination, with special reference to skin lesions elsewhere, and a careful evaluation of the external eye, including bacterial cultures and epithelial scrapings when indicated. Since eyelid eczema may be caused by many different conditions, the treatment will vary accordingly. An incorrect diagnosis may lead to faulty therapy which will yield no benefit and at times may even result in serious aggravation of the original dermatitis. Many of these difficulties may be avoided if these patients are seen by the ophthalmologist to determine if external ocular disease plays a role in the pathologic process.

The major causes of eyelid eczema are (1) allergic eczematous dermatitis; (2) infectious eczematoid staphylococcal dermatitis; and (3) certain generalized dermatoses such as atopic dermatitis, neurodermatitis, seborrheic dermatitis and psoriasis, in which eczematized lesions occur primarily on the eyelids but where careful search will reveal diagnostic lesions elsewhere.

The tendency has arisen to reserve the term "eczematous dermatitis" for those lesions due to contact or other allergies and to use the term "eczematoid dermatitis" for reactions of nonallergic origin that are similar in appearance. Here the term "eczema" is used to describe any skin reaction situated principally in the epidermis, characterized grossly by several of the following: erythema, papulation, vesiculation, oozing, crusting, scaling, thickening, pigmentation and itching, regardless of the cause or the mechanism of production.[25]

Certain factors such as excessive dryness (tending to cause fissures), extreme greasiness (tending to maceration) and inability to neutralize alkalies (possibly due to lack of fatty acids), predispose to skin reactions in general. The skin of the eyelids, however, is particularly susceptible to inflammation for several special reasons. First, its fine texture and extreme thinness readily permit minor traumatization and the penetration of noxious substances of all types. Second, due to their location, the eyelids are especially exposed to physical trauma (rubbing, heat, sun, wind, and ocular secretions) and to various drugs and chemicals applied

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elsewhere on the head and face. Thus, although a facial cream or hair tonic is not directly applied to the eyelids, the eyelids may eventually prove to be the only site of the eczema, as even a minimal amount of the irritant, indirectly contacted by means of a pillowcase during sleep or the fingers, is able here to penetrate sufficiently to cause the reaction, in contrast to its inability to penetrate the thicker and stronger skin where it was originally applied so generously. Similarly, the skin of the eyelids, because of both its delicacy and its vulnerable position, often reacts to bacterial products or ocular medicaments that occur in tears, which would be harmless elsewhere on the skin. This special susceptibility of the eyelids holds for both primary irritants and true sensitizers (allergens), indicating a low threshold of irritability rather than a hyperergic state.

ALLERGIC ECZEMATOUS DERMATITIS

Allergic eczematous dermatitis is the most common form of acute eczema of the eyelids encountered. Basically a form of contact allergy, it is usually due to the use of cosmetics or to ophthalmic drugs. Less often, articles of apparel, jewelry, metals, plastics, other chemicals and animal or vegetable products too numerous to mention, may cause the reaction. New causes of contact allergy are constantly being reported, such as diethylphthalate, a common ingredient of many insect repellents, and thioglycolic acid and its salts, used in cold wave lotions and depilatories. The dermatitis, which may be either unilateral or bilateral, occurs predominantly in women, probably more because they use cosmetics so universally than because of any endocrine factor. In contrast to atopic dermatitis there need be no previous history of familial or personal allergy. The diagnosis depends on eliciting a careful history, positive patch tests and ruling out the other major causes of eyelid eczema, namely primary ocular infection or generalized dermatoses. Furthermore, one must be sure that the contact dermatitis is due to allergy rather than to primary irritation. The highlight of therapy is to eliminate the sensitizing agent; the use of any other allergenic substance may aggravate the condition seriously.

The Mechanism of Contact Dermatitis

Reactive substances causing contact dermatitis may be divided into two classes: (1) primary irritants and (2) mucosal and cutaneous sensitizers. Some substances may act in both ways. Primary irritants cause an inflammatory reaction only by direct action solely at the site of contact. Inflammation occurs if the irritant is used in strong enough concentration, or in sufficient quantity, for a long enough period of time. Unlike an allergy, the irritation may develop the first time the substance is used. In contrast, mucosal or cutaneous sensitizers differ from irritants in that they act as true allergens. Thus, they do not generally cause reactions on first contact; instead, after approximately a week the entire skin, or all the mucous membrane, will react in a specific manner on further contact, either at the original site or elsewhere. These are the sensitizing substances that cause contact allergy, the "delayed" type of allergic response. Reactions, once hypersensitivity has been established, do not usually occur until twenty-four to forty-eight hours after antigen contact. As distinguished from the "immediate" (atopic) type of allergy, there appear to be no circulating antibodies, and in general, passive transfer of the allergy does not occur. While the nonprotein substances causing the allergy are in themselves not primarily antigens, it is believed that they form true antigens in the body by union with the host tissues. These relatively simple chemicals, known as haptens, combine with body

proteins, forming conjugates that act as antigens. The hapten confers specificity on the conjugate; hence, the allergy is directed against the hapten and not against the protein.[11] This explains why the substitution of a drug that is chemically similar to one that previously caused sensitivity in a patient is dangerous. Thus, after allergy to one sulfonamide has developed, another sulfonamide is very likely to cause sensitivity.

For many years it was believed that contact allergy represented rare individual and innate idiosyncrasies. That this idea is untenable was shown by Bloch and Steiner-Wourlisch[6] in 1926 when they proved that any individual could be made sensitive to the primrose plant if one used a concentrated enough extract a sufficient number of times. The site of eczematous (contact type) allergic dermatitis appears to be strictly epidermal, not deeper in the skin. In order to prove contact allergy, patch tests are useful. Immediate wheal testing by intradermal injection, useful in other types of allergy, is not a correct diagnostic procedure here. Even the most superficial intracutaneous or scratch test carries the allergen through the epidermis into the cutis.[26] Details and pitfalls of patch testing have been described elsewhere.[29] From various types of transplantation experiments using very superficial skin grafts, Haxthausen[15] has concluded that the eczematous allergic reaction is not a stationary condition. Normal skin transplanted to a sensitive host acquires the latter's sensitivity within a few days, indicating that the allergic individual produces a factor which penetrates into the skin and makes it sensitive. On the other hand, the sensitive donor skin soon loses its sensitivity when transplanted to a normal recipient. Even homotransplants in sensitive individuals react negatively until five days in situ in the new location. All this implies that the factor responsible for eczematous allergy comes from within the body and, he believes, is related in some manner to the lymphocytes.

FIG. 1—Allergic dermatoconjunctivitis due to eserine eye drops. Intolerance to eserine is rarely allergic; usually an irritative follicular conjunctivitis, without eczema, occurs.

Eczema of the Eyelids Due to Ophthalmic Drugs

Most ophthalmic drugs are true sensitizers. Since the conjunctiva is usually the focal point of contact, the allergic reaction generally begins as a conjunctivitis, soon involving the adjacent skin as a typical allergic dermatoconjunctivitis (fig. 1). The major diagnostic characteristics of this type of reaction in the order of their appearance are (1) severe itching of the eyes, (2) papillary conjunctivitis, (3) eczema of the skin of the eyelids and (4) conjunctival eosinophilia. In the case of eye drops, the earliest signs of eczema may be at the canthi and lower lid; with ointments, the lid margins may first be involved. While any ophthalmic drug may at times result in allergy in susceptible individuals, allergic dermatoconjunctivitis is usually encountered in the following important groups of medicaments: (1) anesthetics, (2) antibiotics, (3) sulfonamides, (4) mydriatic alkaloids and (5) mercurials. Moreover, even if the active ingredient itself is harmless, allergy may often result from ophthalmic vehicles, especial-

ly certain preservatives and ointment bases. It has also been stressed recently[28] that drug intolerance may sometimes be the result of drug irritation rather than drug allergy. Irritation of the conjunctiva is differentiated from allergy in that a nonspecific inflammation, often follicular, results without the occurrence of eczema or eosinophilia. This is usually due to the prolonged use of the miotic alkaloids and related synthetic products, such as eserine, pilocarpine, neostigmine, mecholyl, as well as diisopropylfluorophosphate, which are prone to deteriorate forming irritant end-products. Since drug irritation can be avoided by using properly prepared solutions of the same drug, while drug allergy requires substitution of a different drug, it is of great importance at times to make the distinction between these two types of drug intolerance.

Eczema of the eyelids may also occur following the systemic use of drugs. Such reactions may, on occasion, recur at fixed sites only, and are then known as fixed drug eruptions. Most commonly these follow the ingestion of phenolphthalein, barbiturates, antipyretics, quinine, iodides and bromides. Here patch tests are of little value although there may be marked clinical sensitivity.

Eczema of the Eyelids Due to Cosmetics

Although the first authentic records concerning cosmetics are to be found in early Egyptian papyri, still earlier writings indicate the extent to which beauty aids have been utilized from the dawn of recorded time. Universally accepted, they have been widely used for the past few thousand years, despite sporadic unsuccessful attempts to outlaw the custom, such as the introduction of a bill in the British Parliament in the eighteenth century proposing to make the beguiling of men into matrimony by their use punishable as for witchcraft.[23] So much is now known about the action of cosmetics on the skin, and the exclusion of harmful ingredients is so regulated by law, that the good accomplished by their use far outweighs the occasional harm that occurs. If we consider how universally cosmetics are used, the actual incidence of allergies due to them is very low, although a voluminous literature on the subject is available.

In the diagnosis of eczema of the eyelids due to cosmetics it must be remembered, as explained above, that only the eyelids may react, even if the allergenic substance was applied at a place remote to them. Often the skin of the medial portion of the upper eyelid is involved, initially. Usually the conjunctiva is uninflamed, with no eosinophils. Careful history taking is essential; the use of leading questions often is important in opening avenues of thought otherwise dismissed by the patient as immaterial. Even if a cosmetic has been previously used without reaction for many years, it should not be entirely exonerated because the manufacturer may now have changed the formula or the method of production in some way. In diagnostic testing for cosmetics sensitivity, instead of doing a patch test, it is better to apply the cosmetic daily in the way it is generally used, because in normal use the uncovered cosmetic loses much of its substance by evaporation.[22] Covering the cosmetic by a patch does not permit this evaporation, and thus may give false positive reactions with cosmetics that are actually harmless when used in the ordinary manner.

Nowadays most allergies due to cosmetics are the result of the perfumes used and of impurities in manufacture, as the most flagrant offenders have been eliminated. Sometimes, the cosmetic itself is innocent, but liners in bottle caps or contamination of containers may

cause allergy. Some important types of cosmetics are briefly discussed in the following paragraphs.

Nail polish and nail lacquer. Of all ocular allergies traced to cosmetics, those due to nail polish and nail lacquer are by far the most common. Dermatitis involved the eyelids in 78 of 100 cases of all types of nail polish sensitivity in one reported series.[20] The offending ingredients are believed to be the synthetic resins, such as methacrylates.

Face powders. Face powders used to be sensitizers because of the orris root and the rice powder content. These ingredients are rarely used at present, having been replaced by titanium salts. Now any allergy to it is usually traced to perfumes, and to impurities in manufacture and packaging.

Facial creams. Facial creams such as plain cold cream and vanishing creams are not often sensitizers. In both, the major offender is either lanolin, or cocoa butter, and almond oil.

Lipstick. Lipstick dermatitis is usually due to the indelible dyes used.

Hair preparations. Hair dyes and rinses contain both sensitizers and toxic products. The most commonly used ingredient, paraphenylenediamine, may be both toxic and allergenic. Generally, allergies occur from its use, but in susceptible persons serious toxic reactions may develop, sometimes terminating fatally. Paraphenylenediamine is also the major sensitizer in allergy to furs.

Eyelash dyes and mascara. Eyelash dyes, other than those of vegetable origin, are prohibited by public health authorities because of their paraphenylenediamine content. Allergies are infrequent. Allergy to mascara, when it occurs, is due to the base used, as the dyes employed, such as carbon black and methylene blue, are rarely sensitizers.

Treatment of Eczema of Eyelids Due to Contact Allergy

The basic principle in the immediate treatment of contact allergy is the elimination of the offending substance if it has been identified, or of all possible offenders if no definite cause has been established. Rather than aggravate an already hyperergic skin, which now may react allergically to medicaments it can tolerate at other times, it is generally best to use little or no local therapy. The systemic use of corticotropin (ACTH), cortisone, or hydrocortisone is generally not necessary, but such therapy is valuable in severe reactions. Since the allergy soon subsides, the hormones need only be given for a few days and thus are rarely contraindicated. The local use of cortisone or hydrocortisone, particularly the latter, is often effective, especially for instillation in allergic dermatoconjunctivitis. Antihistamines in any form are not effectual in contact allergy. In drug allergy it may be necessary to use another drug having a similar pharmacologic action. The drug substituted should differ as much as possible chemically from the original excitant, because once sensitization to a drug is evoked, allergies to related drugs are more prone to occur. The drug chosen should also be the least likely to sensitize of all the medicaments available for the purpose, because, when an allergy occurs, many drugs ordinarily harmless to the patient may act as allergens. If it is necessary to continue the use of a drug, such as atropine in uveitis, the concomitant administration of sufficiently large amounts of cortisone or corticotropin (ACTH) systemically is advised. Sometimes the local use of ophthalmic cortisone will suffice, permitting the continuance of the allergenic medicament; however, a definite quantitative dosage factor exists in regard to these hormones and must be kept in mind. As regards the further use

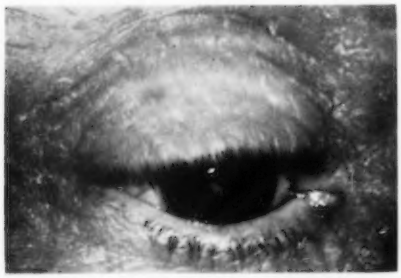

FIG. 2—Infectious eczematoid staphylococcal dermatitis of the eyelid.

FIG. 3—Infectious eczematoid staphylococcal dermatitis of the eyelids. Note the great superficial similarity to figure 4 where the eczema was of nonbacterial origin.

FIG. 4—Allergic dermatoconjunctivitis due to bacitracin ointment.

of cosmetics once the skin has returned to normal, various hypoallergic preparations are available. Even if these result in sensitivities it is unnecessary to condemn the unfortunate lady to a bleak and pale existence. The manufacturers are ready and willing to make special products for such unhappy individuals.

INFECTIOUS ECZEMATOID STAPHYLOCOCCAL DERMATITIS

The term "infectious eczematoid staphylococcal dermatitis" is used to describe the eczematoid reaction occurring in superficial staphylococcal infections. Whether the infection is secondary to other skin pathology, as may occur in the hand,[19] or is primary as generally seems to be the case around the eyes, is relatively unimportant from the therapeutic viewpoint; in either event specific antibacterial treatment in all its forms is indicated, in contrast to the nonspecific symptomatic therapy used for other types of eczema. Proper diagnosis is, therefore, of the utmost importance as such aggressive treatment wrongly applied to the hypersensitive skin of contact allergy, or to the acute manifestations of other dermatoses, will aggravate them immeasurably. On the other hand, the bland regime indicated in nonbacterial eczemas, if wrongly used in the infectious cases, merely serves to provide a better climate for the bacterial process, resulting in a worse condition.

Experience indicates that infectious eczematoid staphylococcal dermatitis of the eyelids, secondary to blepharitis, meibomitis and conjunctivitis caused by toxin-producing pathogenic staphylococci is the most common form of *chronic* eyelid eczema encountered; yet, because its importance is not generally appreciated, it is frequently overlooked (fig. 2). Many unrecognized recurrent cases are treated unsuccessfully for years as instances of contact allergy. Although staphylococcal eczema is usually less extensive than allergic eczema, being, in general, limited to the skin of the eyelids, one cannot distinguish between the two conditions on the basis of the

character of the dermatitis, as the eczema does not have a characteristic appearance (figs. 3 and 4). What is required for its diagnosis and successful treatment is the demonstration that the focal point of the infection is not the skin but, instead, is the eye and its appendages. When this is proved and proper ophthalmic treatment is instituted, the eczema, which is a secondary complication, gradually disappears.

The primary focus, instead of being an obvious diffuse blepharoconjunctivitis, may be obscure, such as minute abscess of a single meibomian gland. However, routine detailed ophthalmologic examination, both clinical and laboratory (cultures and epithelial scrapings), will always reveal the basis for this type of eczema. As differentiated from allergic dermatoconjunctivitis and contact allergy causing eczematous dermatitis, infectious eczematoid staphylococcal dermatitis of the eyelids reveals (1) blepharitis, with scaling and, often, ulcers of the eyelid margins; (2) meibomitis, either diffuse or focal; (3) superficial epithelial keratitis involving the inferior one third to one half of the cornea, demonstrable by biomicroscopy with fluorescein, considered as pathognomonic of staphylococcal conjunctivitis; (4) strongly positive conjunctival and lid margin cultures showing many toxin-producing staphylococci, often entirely out of proportion, numerically, to the objective clinical findings (fig. 5); and (5) absence of eosinophils in the epithelial scrapings which, instead, usually reveal neutrophils and staphylococci, especially on the lid margins.

It is to be stressed that the strongly positive cultures occurring in these patients are obtained from the conjunctiva and lid margins, not the involved eczematized skin. Pathogenic staphylococci, which often are found on normal skin, are especially common in all types of

FIG. 5.—Differential culture of the eyelid margins and conjunctivae obtained from the patient photographed in figure 3, revealing innumerable toxigenic staphylococci. The bacteria growing in the form of "M" (at top of the blood plate) were obtained from the meibomian glands.

eczema. In contrast, cultures of the lid margins and conjunctiva which are positive for pathogens are not a normal occurrence and strongly confirm the clinical findings in patients suffering from infectious eczematoid staphylococcal dermatitis indicating that the primary trouble is ocular, not dermatological.

Infectious eczematoid staphylococcal dermatitis of the eyelids appears to occur almost predominantly in middle-aged women, often postmenopausal. These patients, in the main, have very sensitive skins, exhibiting a marked tendency to develop multiple drug allergies. Diminished lacrimation or even frank keratoconjunctivitis sicca may be present. The occurrence of mild hypothyroidism and, especially, a seborrheic diathesis, both with dry skins, appears to be more than coincidental. An interesting phenomenon is the presence of verrucous lesions which become prominent in these patients. These factors, in addition to irritation from cosmetics, may predispose such patients, in the absence

of atopy, to hypersensitivity or heightened susceptibility to bacterial products.

The Mechanism of Staphylococcal Eczema

The concept that local infections by bacteria could cause eczema is not new, yet, until recently, it gained little general acceptance. Even before the apt, if unwieldy, term "infectious eczematoid dermatitis" had been given to the entity by Engman[12] in 1902, other investigators had stressed the role of bacterial infection in its causation. Within the last twenty years, however, more and more dermatologists have come to appreciate the importance of either primary or secondary bacterial infection, especially staphylococcal, in the production and perpetuation of eczema. Until recently, one of the most underrated bacteria in medicine was the Staphylococcus. The important role this organism plays in the pathogenesis of many common external diseases was overlooked primarily because investigators did not differentiate pathogenic toxin-producing strains from the ubiquitous nonpathogenic varieties to be found on cultures of the conjunctiva and other mucous membranes, the eyelids and the skin. The fact that the Staphylococcus produced exotoxins had been demonstrated over fifty years ago; however, except from the French, these toxins received surprisingly little attention until less than twenty-five years ago. Burnet's fundamental work[10] in 1929 is the basis of modern concepts concerning these toxins, as well as for the therapeutic use of staphylococcal toxoid and antitoxin. Of the many toxic products elaborated by the Staphylococcus the only one germane to our subject is the thermolabile and filtrable exotoxin which contains a dermonecrotizing factor. A safe, yet antigenic, toxoid is made by treating exotoxin with formalin or other products. Thygeson[32-34] was the first in the field of ophthalmology to stress the etiologic importance of such toxigenic staphylococci in blepharitis, meibomitis, conjunctivitis, especially the chronic variety, and keratitis, revitalizing our concepts and treatment of these long-neglected conditions. He has pointed out the significance of such staphylococcal infections in the causation of eczematoid dermatitis of the eyelids.[35]

The question arises whether staphylococcus toxin exerts a direct toxin action or whether allergy to it results in pathologic processes. I believe both mechanisms operate. Allen[1,2] has produced conjunctivitis and the superficial keratitis characteristic of staphylococcal conjunctivitis by the instillation of staphylococcal toxin. His experiences with the beneficial effects of antitoxin in corneal infections due to the Staphylococcus[3] is additional evidence for direct toxic action. Yet, on the other hand, the work of both Woods[39,40] and Burky[9] strongly suggests the existence of chronic conjunctivitis due to marked hypersensitivity to staphylococcus toxin, and others like Braley[7] have felt that allergy to the toxin is a major factor in many ocular inflammations, such as marginal infiltrates of the cornea. There seems little doubt that allergy to other products of the Staphylococcus occurs. Skin reactions to staphylococcal filtrates are elicited in about 65 per cent of normal individuals and in nearly all persons with staphylococcal infections; however, no reactions are obtained in newborn infants. Since the reaction appears to develop without relation to the amount of antitoxin in the blood, it would seem to indicate an allergic state. Type A (pathogenic) polysaccharide produced by staphylococci causes an immediate wheal and erythema upon intradermal injection in patients with staphylococcal infection. A delayed type of response occurs upon injection of

the protein common to both Type A and B staphylococci.[4] Gernez and Pannequin[14] feel that intradermal injection of toxin causes two phenomena, one toxic, the other allergic. The toxic reaction, being reciprocally dependent on the blood antitoxin titer, provides an index of immunity to staphylococcus infection; the allergic reaction, of shorter duration, is uninfluenced by antitoxin and may be elicited by dilute toxin, heated toxin, or toxoid. The intradermal reaction to dilute toxoid offers, within limits, an index of allergy to staphylococcus proteins and to other staphylococcic products. This supports clinical observations. Marked reactions to dilute toxoid or vaccine appear diagnostically significant of allergy. These reactions may be both of the immediate and delayed types, and on rare occasions are especially marked with autogenous vaccines as compared to toxoid. An allergic correlation of positive toxoid reactions with past or present staphylococcal infection has been found by Wagner and Malay.[38]

As regards the dermatitis secondary to staphylococcal infection, the fact that this bacteria produces a potent skin-necrotizing exotoxin would suggest that the mechanism is a direct toxic one. However, here too there is some evidence that bacterial allergy or an even more complex allergic reaction may play an equal, if not more important, role in the production of the eczema. Hopkins and Burky[18] studied 40 cases of intractable eczema. All were sensitive on skin test to staphylococcus toxin and on culture most lesions revealed pathogenic staphylococci. They used staphylococcal toxin injections with good results and concluded that the eczemas were due to local hypersensitivity to the patient's own skin keratin, brought about by the liberation of staphylococcus toxin, plus trauma at the site of the lesions. Some confirmation of this theory is afforded by the work of Hecht, Sulzberger and Weil,[16] who in 1943 showed that staphylococcus toxin exerted a synergistic action, when injected coincidentally with rabbit skin antigen, in producing antibodies (precipitins) to homologous skin in rabbits. Ulbricht,[37] working with toxins obtained from bacteria cultured from eczematous lesions, concluded that nummular foci of eczema appear as an expression of sensitivity to toxin obtained from the primary focus. Storck[24] in his studies on bacteria in eczema concluded that autosensitization to bacterial products played an important part in its production. It would appear that eczema occurs in infectious eczematoid staphylococcal dermatitis as the result of a combination of two mechanisms, one the direct action of dermonecrotizing toxin, and the other, allergy to staphylococcal products or to a staphylococcus toxin-skin protein complex. Treatment is influenced in certain details by the relative importance of these mechanisms in the individual patient.

Treatment of Infectious Eczematoid Staphylococcal Dermatitis

The basis for treatment is the usual one for staphylococcal infections: (1) the use of antibacterial agents and (2) injections of toxoid and vaccines, when indicated. It is necessary to bear in mind, however, that the patient may be conditioned by an unusually sensitive skin, so that allergies to antibiotics, sulfonamides, antiseptics and ointment bases are particularly common. Moreover, bacterial resistance to antibiotics is often encountered. The immediate objective, as far as the patient is concerned, is to cure the eczema; eliminating the underlying infection, often very difficult, is not as important to them, although if it is not accomplished, recurrences are not infrequent.

The systemic use of antibiotics or sulfonamides, if tolerated, is advised, but

it is not, in my experience, especially effective, although dermatologists have found these medicaments most efficacious in infectious eczematoid staphylococcal dermatitis occurring elsewhere in the skin,[8] probably because the infection is not as deep-seated. Their local use gives better results. Ten per cent sodium propionate, pH 6.0, is safe and often valuable.[30,31] Expression of the lid glands where meibomitis is present is useful. The value of topical applications of 2 per cent silver nitrate painted over the lid margins, the entire involved skin of the eyelids and, especially, any fissures that may be present should be stressed. Sometimes dramatic improvement follows such treatment, yet care must be taken against too generous or too frequent use, as direct primary irritation of the already inflamed skin sometimes does occur.

Hydrocortone appears to be the most effective of the corticosteroids. Its local use often results in rapid improvement in the dermatitis, after the underlying bacterial process is controlled but not necessarily eliminated.

Toxoids and vaccines are reserved for the most resistant cases and for those patients in whom bacterial allergy or an allergic complex appears operative, as manifested by intradermal reactions to dilute toxoid. It is now generally accepted that for the production of staphylococcus antitoxin the antigenic properties of toxoid are vastly superior to those of vaccines, and that toxoid is usually far more successful in the treatment of most subacute or chronic cutaneous infections.[5,21] Clinical improvement is accompanied by an increased titer of circulating antitoxin which, however, varies with different individuals. The immunity derived is antitoxic; no antibacterial effects obtained. Vaccines, on the other hand, stimulate the formation of other types of antibodies, such as agglutinins, but little or no antitoxin is formed. Yet, on occasion, they appear clinically more effective than toxoid. Therefore, while the use of staphylococcus toxoid is always indicated in resistant staphylococcal infections, it would appear desirable to employ vaccine as well.[13] Stock vaccine-toxoid combinations are commercially available. However, on the theory that bacterial allergy is present, it is felt that in long-standing instances of infectious eczematoid staphylococcal dermatitis, autogenous vaccine is preferable, as all the autogenous bacterial proteins, polysaccharides and other products are thus utilized for desensitization. By this method, the combined use of toxoid and autogenous vaccine, better results appear to be obtained. The best therapeutic results of vaccination often occur in individuals with the most marked initial reactions, as also noted by Thygeson.[36] If clinical improvement is paralleled by negative conjunctival and lid margin cultures and reduced intradermal reactions, recurrences are unlikely. In a patient who could not tolerate any form of biologic therapy because even minute doses of autogenous vaccine caused arthritis with swelling of the fingers, the eczema cleared, mainly due to the use of silver nitrate. Cultures and skin reactions are still positive and the eczema has recurred in mild form whenever local therapy has been discontinued. Although the antitoxin titer is usually elevated after vaccination, this is not always so; instances have been reported where minimal intradermal reactions to toxoid are present in previously positive individuals, despite a very low antitoxin titer.[14]

It seems advisable to base initial dosages on the reaction to small intradermal injections, and to maintain a flexible schedule dependent on the individual's tolerance. Using staphylococcus toxoid, of which there are a number of

varieties available, the original injection should be 0.01 to 0.02 cc. Until the amount used is more than 0.1 cc. it should be injected intradermally; after that, 0.1 cc. of the dose may still be given that way, while the remainder of the dose is administered subcutaneously. Increasing slowly (0.1 cc. at a time), injections are given once a week or every four or five days. Once dosage reaches 1.0 cc. it may be given at increasing intervals but should be maintained at that level for a long period of time to ensure a constantly elevated antitoxin titer in the blood. More rapid dosage schedules may be used, but generally slow increases appear preferable. Experiences with a new purified and absorbed toxoid by Tasman et al.[27] indicate that with it maximal antitoxin titers are attained after only a few injections, regardless of intervals between injections, with no undesirable side reactions.

ECZEMA OF THE EYELIDS IN GENERALIZED DERMATOSES

In certain generalized dermatoses, such as atopic dermatitis, neurodermatitis, psoriasis, and especially seborrheic dermatitis, a nonspecific type of eczema of the eyelids may occur. The distinguishing feature of these cases is that while the eyelid may appear to be the only area of skin involved and the eye itself may show changes, careful search will reveal diagnostic skin lesions elsewhere. Treatment of this type of nonspecific eyelid eczema is gentle and soothing in order to alleviate the acute reaction that is present.

Atopic Dermatitis and Neurodermatitis

Atopic dermatitis begins in the young as infantile eczema. It is an extremely pruritic condition with a predilection for the eyelids, face, the antecubital and popliteal flexures, and the sides and back of the neck. As the name indicates, a familial history usually is obtained and other allergies such as hay fever and asthma are present. The patient almost always exhibits multiple atopic sensitivities of the "immediate" type evidenced by immediately positive reactions to intracutaneous or scratch tests. Most of the time, however, the agents responsible for the eczema are not demonstrable by these intradermal wheal tests. Blood eosinophilia often is present. The eczema is characterized by exacerbations and remissions over a period of years. The occurrence of cataracts as a complication is well known. Hogan[17] has recently reported five cases of severe keratoconjunctivitis associated with atopic eczema, paralleling the skin activity and characterized by thickening and hyperemia of the conjunctiva and opacification and vascularization of the cornea. Conjunctival eosinophilia was noted. Prompt improvement occurred with oral or topical cortisone therapy. Atopic eczema responds symptomatically to systemic cortisone and recurs when treatment is stopped. Antihistaminics such as benadryl may be helpful due to antipruritic action.

Neurodermatitis, often without atopy, occurs in adults and is usually related to one circumscribed area.

Seborrheic Dermatitis and Psoriasis

Seborrheic dermatitis is a superficial scaling dermatitis of diffuse involvement, rarely limited to the eyelids (fig. 6). Lesions occur typically in the scalp (dandruff), eyebrows, lid margins, behind the ears, the sternum and axillae. Seborrheic blepharitis is characterized by greasy scales which reveal numerous yeasts (Pityrosporum ovale) on scrapings.[32-34] An associated conjunctivitis may be present, but superficial epithelial keratitis only rarely occurs and is not likely to be confused with the staphylococcal variety. The dry skin of the

FIG. 6.—Seborrheic eczema of the eyelids.

eyelids of the seborrheic individual may serve as the predisposing factor in both allergic and infectious eczema.

Psoriasis favors the hair line of the scalp, elbows, knees and extensor surfaces of the extremities. The eyelids and face are rarely affected. Placque-like hyperemic scaly lesions occur. Ocular complications such as conjunctivitis and keratitis are unusual.

Treatment of Nonspecific Types of Eczema

The basic principle in the treatment of the acutely inflamed eyelid is a gentle and soothing, stage-by-stage symptomatic approach. When edema and erythema are present, astringents in the form of wet dressings are indicated. Camomile tea or cold milk are the mildest; dilute aluminum acetate (1:20) and 2 per cent sodium propionate are also useful. After the acute signs have subsided (in twenty-four to forty-eight hours) and the condition becomes subacute, pastes are employed, since the further application of compresses would lead to excessive dryness and consequent fissuring. A paste is a mixture of powder and grease. Lassar's zinc paste, containing zinc oxide, talcum, lanolin, vaseline and wax, is the one most commonly used. A paste, being porous due to the powder it contains, will cool the skin and adsorb the microscopic ooze that exists at this subacute stage; an ointment, being non-porous, will heat the skin and is not well tolerated. The paste is applied in a very thin film, morning and night. Soap and water should be strictly prohibited. If cleaning is desired, gentle sponging with olive oil is indicated. After several days of application an excessive dryness may develop. At this stage when only minimal inflammatory signs are present a mild ointment like petrolatum or boric acid ointment should be applied very thinly at night and removed, almost but not quite entirely (with dry cotton), in the morning.

Up to this point only bland medicaments are used. The use of pharmaceutically active drugs, such as sulfur, mercury, tar and vioform, is reserved for chronic infiltrated cases. The drugs should be prescribed in weaker concentrations than those used routinely on the other parts of the body. If a seborrheic basis is suspected, sulfur 1 to 2 per cent may be given in an ointment base. If an atopic constitution exists, coal tar 1 to 2 per cent is indicated. Ammoniated mercury 1 to 2 per cent may be very effective in the seborrheic type or where psoriasis plays a role. Vioform 1 to 2 per cent has proved generally valuable in chronic eczema and is especially effective where the lesions have an impetiginous character.

Fissures, which occur when the skin begins to dry, should be cauterized with silver nitrate 2 per cent. Then the medication, paste or ointment, is applied directly to the cauterized fissure to counteract the extreme dryness of the caustic.

Many drugs such as tar, sulfur and vioform are supplied in a vanishing cream base. Creams are thinner than ointments due to a greater content of fluid ingredients. Vanishing creams are soaps, being oil in water emulsions in

which the fats have been soponified by suitable alkalies. They have a cooling effect because they evaporate yet do not dry to excess since a film of bland fatty soap remains. Vanishing cream bases embody in one preparation the three principles of treatment outlined above: (1) moisture for the acute stage, (2) paste for the subacute stage and (3) softening grease for the chronic stage. Thus they may be substituted in subacute or chronic cases with a reasonable degree of success, but the stage-by-stage approach described above is generally more advisable if the patient can be seen frequently enough.

SUMMARY

The successful management of the eyelid eczemas requires differentiation of the major causes of the condition, as the treatment will vary accordingly. An incorrect diagnosis leading to faulty therapy not only will yield no benefit but may result in aggravation of the original dermatitis. In practice three main groups are encountered: (1) allergic eczematous dermatitis, due to contact allergy, in which the basic treatment is elimination of the allergens; (2) infectious eczematoid staphylococcal dermatitis secondary to eyelid infection, the most common cause of chronic eczema encountered by ophthalmologists, in which intensive treatment with anti-infective medicaments, staphylococcus toxoid and vaccine is indicated; and (3) certain generalized dermatoses such as atopic dermatitis, seborrhea and psoriasis, in which the nonspecific eyelid eczema that occurs along with diagnostic lesions elsewhere on the skin requires gentle stage-by-stage symptomatic treatment. Differentiation of these clinical entities is of great value in the treatment of eyelid eczemas, which often may present therapeutic problems. Many of these difficulties may be avoided if such patients are seen by the ophthalmologist to determine if external ocular disease plays a role in the pathologic process, because the importance of staphylococcal eczema has up to now not received the recognition it deserves.

* * *

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REFERENCES

1. Allen, James H.: Staphylococcic conjunctivitis, experimental reproduction with staphylococcus toxin, Am. J. Ophth., 20:1025-1031 (Oct.) 1937.
2. ———: Experimental production of conjunctivitis with staphylococci, Am J. Ophth., 22:1218-1226 (Nov.) 1939.
3. ———: Antitoxin treatment of staphylococcic corneal ulceration, Am. J. Ophth., 30:987-992 (Aug.) 1947.
4. Blair, J. E.: The Staphylococci, in Bacterial and Mycotic Infections of Man, edited by R. J. Dubos, Philadelphia, J. B. Lippincott Co., 1948, p. 336.
5. ———: The Staphylococci, in Bacterial and Mycotic Infections of Man, edited by R. J. Dubos, Philadelphia, J. B. Lippincott Co., 1948, p. 339.
6. Bloch, B., and Steiner-Wourlisch, A.: Die willkürliche Erzeugung der Primelüberempfundlichkeit beim Menschen und ihre Bedeutung für das Idiosynkrasieproblem, Arch. f. Dermat. u. Syph., 152:283-303, 1926.
7. Braley, A. E.: Role of staphylococci in eye infections, Am. J. Ophth., 28:1022 (Sept.) 1945.
8. Brodey, Marvin: Personal communication to the author.
9. Burky, E. L.: Staphylococcus toxin and antitoxin, Internat. Clin., 3:258 (Sept.) 1936.
10. Burnet, F. M.: The exotoxins of Staphylococcus pyogenes aureus, J. Path. & Bact., 32:717-734, 1929.

11. Carr, Edward A., Jr.: Allergy to drugs, New England J. Med., 245:892-900 (Dec. 6); 935-940 (Dec. 13) 1951.

12. Engman, M. F.: An infectious form of an eczematoid dermatitis, Am. Med., 4:769-773 (Nov. 15) 1902.

13. Etris, Samuel: A comparison of the antigenic properties of staphylococcal vaccine, staphylococcal toxoid and the two in combination, J. Immunol., 46:309-314 (May) 1943.

14. Gernez, C., and Pannequin, C.: L'intradermoréactions à la toxine et à l'anatoxine staphylococciques comme test de l'immunité et de l'allergie antistaphylococciques chez l'homme, Rev. d'immunol., 3:97-135, 1937.

15. Haxthausen, H.: The pathogenesis of allergic eczema, illustrated by transplantation experiments, Acta dermat.-venereol., 31:42-45, 1951.

16. Hecht, Rudolph, Sulzberger, Marion B., and Weil, Harry: Studies in sensitization to skin. I. The production of antibodies to skin by means of the synergistic action of homologous skin antigen and staphylococcus toxin, J. Exper. Med., 78:59-65 (July 1) 1943.

17. Hogan, Michael J.: Atopic keratoconjunctivitis, Am. J. Ophth., 36:937-947 (July) 1953.

18. Hopkins, H. Honford, and Burky, E. L.: Cutaneous autosensitization: role of staphylococci in chronic eczema of the hands, Arch. Dermat. & Syph., 49:124-127 (Feb.) 1944.

19. Lane, C. Guy, Rockwood, Ethel M., Sawyer, Carl S., and Blank, Irvin H.: Dermatoses of the hands., J.A.M.A., 128:987-993 (Aug. 4) 1945.

20. Osborne, Earl D., Jordan, James W., and Campbell, Paul C., Jr.: Dermatitis venenata due to nail lacquer, Arch. Dermat. & Syph., 44:604-615 (Oct.) 1941.

21. Ramon, G., Richou, R., Mercier, P., and Holstein, G.: Dix années d'application de l'anatoxine staphylococcique à la thérapeutique des affections dues au staphylocoque en médecine humaine et en médecine veterinaire. Considérations générales sur l'anatoxithérapie et la pénicillinothérapie, Rev. d'immunol., 10:71-81, 1946.

22. Schwartz, L.: Allergy of the Skin, in Allergy in Theory and Practice, edited by R. A. Cooke, Philadelphia, W. B. Saunders Company, 1947, p. 263.

23. Schwartz, L., and Peck, S. M.: Cosmetics and Dermatitis, New York, Paul B. Hoeber, Inc., 1946, p. 43.

24. Storck, Hans: Experimentelle Untersuchungen zur Frage der Bedeutung von Mikroben in der Ekzemgenese, Dermatologica, 96:177-262, 1948.

25. Sulzberger, Marion B.: Dermatologic Allergy, Springfield, Ill. Charles C Thomas, 1940, p. 506.

26. ———: Dermatologic Allergy, Springfield, Ill., Charles C Thomas, 1940, p. 64.

27. Tasman, A., Brabdwijk, A. C., Marseile, A., van Ramshorst, J. D., and van der Slot, J.: On the purification and adsorption of staphylococcus toxoid, J. Microbiol. & Serol., 18:336-348, 1952.

28. Theodore, Frederick H.: Drug sensitivities and irritations of the conjunctiva, J.A.M.A., 151:25-30 (Jan. 3) 1953.

29. ———: The classification and treatment of allergies of the conjunctiva, Am. J. Ophth., 36:1689-1705 (Dec.) 1953.

30. ———: Use of propionates in ophthalmology, Arch. Ophth., 41:83-94 (Jan.) 1949.

31. ———: Use of sodium propionate in external infections of the eyes, J.A.M.A., 143:226-228 (May 20) 1950.

32. Thygeson, Phillips: Bacterial factors in chronic catarrhal conjunctivitis; role of toxin-forming staphylococci, Arch. Ophth., 18:373-387 (Sept.) 1937.

33. ———: Etiology and treatment of blepharitis; a study in military personnel, Arch. Ophth., 36:445-477 (Oct.) 1946.

34. ———: Ocular Bacteriology, Ophthalmologic Study Council, Boston, 1947.

35. ———: Ocular manifestations of the dermatoses, Tr. Am. Acad. Ophth., 56:737-750 (Sept.-Oct.) 1952.

36. ———: Treatment of staphylococcic blepharoconjunctivitis with staphylococcus toxoid, Arch. Ophth., 26:430-434 (Sept.) 1941.

37. Ulbricht, Hans: Über Ekzeme durch Bakterien und deren Toxine, Arch. f. Dermat. u. Syph., 192:94-105, 1951.

38. Wagner, V., and Malay, V.: Allergy to toxoid, skin tests in patients with staphylococci infections, Casop. lek. cesk., 89:1277-1280 (Nov. 17) 1950.

39. Woods, A. C.: Clinical problems of allergy in relation to conjunctivitis and iritis, Arch. Ophth., 17:1-17 (Jan.) 1937.

40. ———: The diagnosis and treatment of ocular allergy, Am. J. Ophth., 32:1457-1478 (Nov.) 1949.

DISCUSSIONS

PHILLIPS THYGESON, M.D., San Jose, Calif.: I wish to compliment Dr. Theodore on a very excellent presentation of a subject which is of constant importance, not only to ophthalmologists but to dermatologists and allergists as well, and of which the management, until recently at least, has been extremely difficult.

Dr. Theodore rightly emphasizes the fact that lid eczemas do not constitute a single clinical and etiologic entity but can be divided into three major types of which contact dermatitis is the most common and most important because it is so difficult to control. He further rightly emphasizes that the second type, infectious eczematoid dermatitis, which is usually staphylococcic, is often misdiagnosed as a contact dermatitis and improperly treated in consequence. It is true that in some cases in which a secondary staphylococcal infection has been engrafted on a contact dermatitis, or the reverse, recognition of the primary cause is difficult, but a clinical differentiation can usually be made readily enough through observation of the conjunctiva and lid margins. In contact dermatitis of the lids, other than that due to the instillation of medications into the eye, the conjunctiva and lid margins are involved only slightly or not at all, whereas in infectious eczematoid dermatitis of the lids, a blepharoconjunctivitis, usually quite marked, precedes the lid eczema and runs concurrently with it. The cases due to conjunctival instillations of medication offer no differential problem. In all cases of lid eczemas cultures can be of great aid in differential diagnosis and therapy, and I have found that conjunctival and lid margin epithelial scrapings also give useful information.

My experience has been that the ophthalmologist can often do as well as the allergist or the dermatologist in determining the sensitizing agent, and with much saving of expense to the patient. Since almost twice as many women as men are affected, it is natural that cosmetics should be considered first. A good history viewed in the light of experience with previous cases has been more useful to me than routine patch tests, although the patch test has of course been extremely useful in proving sensitization to suspected substances. In spite of everything the ophthalmologist, dermatologist, or allergist can do, however, the source of some cases cannot be determined and reliance must be placed in nonspecific therapy such as hydrocortisone ointment.

I was extremely interested in Dr. Theodore's comments on the mechanism of production of the dermatitis in staphylococcal infectious eczematoid dermatitis and fully agree with him in most cases direct toxic action of the skin-necrotizing toxin is combined with a sensitization to saphylococcal products. I feel that sensitization to the toxin itself is the more important factor since a conjunctival eosinophilia commonly occurs in the condition and is not a feature of sensitivity to bacterial proteins alone. Intradermal reactions to staphylococcus toxoid may be extremely severe in these cases. I have had no difficulty in controlling the eczematoid reactions in this type of case by topical treatment with hydrocortisone ointment and an antibiotic to which the strain of staphylococcus has proved sensitive, but elimination of the underlying marginal blepharitis or meibomitis is sometimes extremely time-consuming because of deep involvement of the lid margin glands.

If the lid eczemas are associated with eczematous lesions elsewhere, the problem of differential diagnosis has in my experience been greatly simplified. In contact dermatitis with lesions on the hands, the pattern of involvement is often such as to give a useful clue to the sensitizer, as in occupational dermatitis. Only rarely does the pattern of involvement on the eyelids give such information, e.g., in cases of sensitization to spectacles.

Dr. Theodore's paper contains much useful information which time did not permit him to present today, and I strongly urge every ophthalmologist to study it thoroughly on publication.

ALSON E. BRALEY, M.D., Iowa City, Iowa: This interesting paper of Dr. Theodore's was presented to me at an early date and I had an opportunity to read it. It is an excellent paper, and I can recommend it very highly to all of you. I should like to point out a few things that perhaps may not have appeared in the parts that he presented.

Swinny, reporting in the Annals of Allergy in 1951, states that the periorbital area is the frequent site of contact dermatitis. He says that the history of the contactant is most important, and he feels that contact testing of these allergies is not of much value. Of 63 patients with dermatitis of the lids, 85 per cent were females and only 15 per cent were males. Cosmetics play a major role, while cream-based shampoos are of equal importance. Eighty-eight per cent of the patients were between the ages of 20 and 60.

Since most of these are primary irritants, many of the substances may be sensitizers, as Dr. Theodore calls them. In my experience, contact dermatitis may be produced by a primary irritant, such as cold wave lotion. When

it is applied the first time it will produce the dermatitis. However, sensitizers such as shampoos and cosmetics also develop either moderate or delayed types of reactions.

The treatment of contact dermatitis of the lids may be very annoying to both the physician and the patient. The best treatment, of course, is to find the cause and to isolate the individual from the substance. One lady I remember was sensitive to a gold wedding ring which she wore on her finger and which produced a dermatitis of her lids, but on occasions she felt that it was rather important for her to wear the wedding ring.

My experience was similar to that of Dr. Theodore's in that antihistaminics are of no value in this group.

In emphasizing the infectious group, the staphylococcal group, I think it is most important to consider that they are very important. I believe that the toxin of the Staphylococcus is the principal offender. This irritant may produce either a primary necrosis of the skin or act as an antigen to produce the allergy. This may be either primary or secondary, the delayed type of hypersensitivity reaction. Dr. Theodore has discussed the problem very well in his paper, and it is interesting to note that Vidal and Weil discussed this problem also. They, however, discussed it from a different approach. They claim that a lipid reaction combined with the infectious infection produces the disorder. The oily secretion arising in the sebaceous glands is largely, under normal circumstances, oleic acid. However, in lipid blepharitis and dermatitis the glands secrete a paraffin-like stearic acid compound. This substance tends to obstruct the necks of the glands. This change in secretion is due probably to a faulty lipid metabolism which may be responsible or act as the agitant in developing the hypersensitivity reaction.

Fazakas, Mendelblatt and Hanabusa feel that other substances are very important, particularly yeast and fungi, in producing the eczematoid diseases of the lids. Hanabusa, according to a report received from Mitsui, has been able to produce sensitization of rabbits to Candida albicans after repeated instillations. Thygeson, as you know, has stressed Pityrosporum ovale. In the treatment I agree that staphylococcic toxoid is probably the most valuable substance we have. I follow much the same program as that presented by Dr. Theodore and at an earlier date by Dr. Thygeson.

Atopic keratoconjunctivitis, according to Hogan, produces a typical diagnostic picture in the conjunctiva and cornea.

I was interested that Dr. Theodore suggested that psoriasis of the eye is so unusual. In examining the literature, I found that Vrabeck reported his case just recently. He was able to find only six cases in the literature, and of these six he would accept only three. His case was typical, and the one that was reported by Dr. Pillat was also typical. From these reports I would suspect that since only three cases have been reported in the literature to date, psoriasis is not a very important cause of dermatitis of the eyelids.

Sjögren's syndrome, the mucocutaneous disease of Johnson-Stevens, and others are more important and are frequently associated in my opinion with eczematoid-like lesions of the lids producing a blepharitis.

STERILIZATION OF SHARP INSTRUMENTS BY BOILING, WITH UTILIZATION OF CATHODIC PROTECTION TO PREVENT CORROSION

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BY INVITATION

ALTHOUGH moist heat is recognized as the most effective means of sterilization of surgical equipment, it has heretofore not been practical to autoclave or boil sharp-edged instruments such as knives, scissors and delicate forceps because their sharpness is greatly impaired by only a few minutes of such a procedure. Consequently, a great number of sterilizing solutions have been developed, and instruments such as cataract knives and iris scissors are customarily sterilized by immersion for ten to twenty minutes in such solutions as 10 per cent formalin in 1:5000 zephiran. This is quite satisfactory from the standpoint of maintaining a sharp edge, and in clinical practice seems to give adequate bacterial control. It has long been well known, though perhaps not generally recognized, that germicidal solutions do not destroy bacteria as completely as simple post-sterilization cultures would seem to indicate. Specific neutralizing procedures will often reveal that a small proportion of the organisms have merely been rendered bacteriostatic and are quite capable of revival and multiplication. The following examples of this may be cited:[2,7,8,10]

1. Staphylococcus aureus in 1 per cent mercuric chloride for up to seventy-two hours may be grown in culture if the mercuric ion is precipitated out as insoluble mercuric sulfide by hydrogen sulfide, glutathione or other thiols.

2. Staphylococcus aureus in 1:60 phenol for up to twenty-five minutes may be grown in culture if the phenol is adsorbed on charcoal.

3. Staphylococcus aureus in 1:3000 zephiran for ten minutes, but not for thirty minutes, may be grown in culture if the zephiran is neutralized by large anions.

4. Hypochlorite inactivation of bacteria may be countered by thiosulfates.

5. Halogen inactivation of bacteria may be neutralized by substitution of other anions.

6. Dye "killed" bacteria may be revived by changing the pH so that the dye-protoplasm complex may become ionized.

7. Sulfadiazine inactivated bacteria grow again in media containing para-aminobenzoic acid.

In all the above examples the chemical "germicide" combines *reversibly* with certain molecular groupings of the bacterial protoplasm or enzyme systems, and thereby effectively prevents growth of the bacterium in ordinary cultures. However, when the disinfectant is removed — either by simple dilution or by specific antidote, the pathogen is again free to multiply.

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TABLE I

PERCENTAGE OF TEST SHOWING GROWTH AFTER DISINFECTING RUBBER RINGS (CATHETERS) OR GLASS RODS (THERMOMETERS) (WALTER B. NUNGESTER[5])

		RUBBER RINGS — E. COLI			GLASS ROD — STAPH. AUREUS		
DISINFECTANT	TIME IN MINUTES	NUMBER TESTED	PERCENT + GROWTH IN BROTH	+ GROWTH IN BROTH + NEUT.	NUMBER TESTED	PERCENT + GROWTH IN BROTH	+ GROWTH IN BROTH + NEUT.
Aq.	1	5	20	40	2	50	50
Phemerol	10	5	20	40	2	50	50
1:1000	60	5	20	40	2	0	50
Aq.	1	5	0	80	4	25	75
Merthiolate	10	5	0	100	4	0	75
1:1000	60	5	0	80	4	0	75
Aq.	1	4	25	50	1	100	100
Zephiran	10	4	50	25	1	100	100
1:1000	60	4	50	25	1	0	100
Tincture of	1	6	0	0	7	29	70
Iodine	10	6	0	0	6	16	50
2%	60	6	0	0	6	0	0
$HgCl_2$	1	3	0	100	1	0	100
1:1000	10	3	0	33	1	0	100
	60	3	0	33	1	0	100
Lysol	1	2	100		13	46	
2%	10	2	50		13	30	
	60	2	0		13	0	
Listerine	1	5	100		1	100	
	10	5	80		1	0	
	60	5	80		1	0	
Bard-Parker	1	2	0		5	20	
Solution	10	2	0		5	20	
	60	2	0		5	20	

Table I shows the percentage of bacterial growth following various methods of chemical sterilization of rubber catheters and glass thermometers. It is notable that growth was obtainable in 75 to 80 per cent of the articles immersed in 1:1000 merthiolate for an hour; in 25 to 100 per cent of articles in 1:1000 zephiran for an hour; in 33 to 100 per cent of articles in mercuric chloride 1:1000 for an hour; in 0 to 20 per cent of articles in Bard-Parker solution for an hour; in 30 to 50 per cent of articles in 2 per cent lysol for ten minutes; and in 0 to 50 per cent of articles in 2 per cent tincture of iodine for ten minutes.

It is not to be inferred from the preceding data that chemical sterilization is completely ineffective. Exact figures are hard to find, but one example[8] involved the sterilization of an eggshell by zephiran 1:5000. In five minutes the bacterial population was reduced from four million organisms to several thousand organisms. Generally speaking, bacteria are destroyed at a logarithmic rate; that is, a straight line is obtained by plotting the logarithm of the number of surviving bacteria against the time of disinfection. This implies that the initial death rate is extremely high but decreases as the more susceptible organisms are killed. Apparently the last 1

per cent to 0.1 per cent of many types of bacteria display comparatively striking resistance to germicides, and it presumably is this small percentage which is reactivated by the previously described procedures. It has been postulated that these survivors may exist in the protected center of agglutinated clumps of bacteria, or in crevices of the surface being sterilized.

Several disinfectant combinations have recently been popular. The University of Michigan uses benzalkonium germicidal solution.[4]

Isopropanol 99%	900 cc.
Methanol	72 cc.
Formalin 37%	144 cc.
Benzalkonium chloride 12.8% (Zephiran)	14.4 cc.
Sodium nitrite	18.0 gm.
Distilled water to make	1800 cc.

Dr. M. Hayward Post[6] of the Washington University School of Medicine advocates the following:

Liquor cresolis compound	8.0 cc.
Oil of lavender	2.0 cc.
Thymol crystals	2.0 gm.
Ethyl alcohol 95%	88.0 cc.

Both of these preparations are very effective, completely killing unprotected bacteria in less than five minutes. They do not cause corrosion and instruments may safely be kept in solution indefinitely.

The effectiveness of chemical germicides depends greatly upon the environment in which they act. This is well illustrated by the following facts about the action of zephiran, a germicide very widely used in ophthalmology.[8] (Zephiran is a cationic detergent—alkyl dimethyl benzyl ammonium chloride.)

1. Zephiran may be completely neutralized by anionic compounds such as soaps, anionic detergents and phospholipids. Specifically, soap preparation of an operative site inhibits the germicidal activity of a subsequent zephiran rinse.

2. Zephiran combines with protein in approximately equal proportions by weight. Zephiran 1:1000 is completely inactivated by 1 per cent protein, serum, milk, etc.

3. Zephiran is adsorbed on surfaces such as charcoal, agar, bacteria, and its effective concentration remaining in solution is thereby reduced.

4. Zephiran functions poorly in acid solution and is completely ineffective as a germicide at pH 3 or below.

5. Zephiran forms a monomolecular oriented layer on a fatty surface such as skin, with the external, hydrophilic end being the germicidal end. As a result, the surface is sterile to cultures, but viable bacteria may exist beneath the zephiran film and escape later.

6. Zephiran does not act equally on all organisms. Staphylococcus aureus is quite susceptible (see data in previous paragraphs). Pseudomonas aeruginosa is ten to twenty times as resistant, Tbc even more so, and spores may withstand up to a 1:10 concentration. Viruses are said to be resistant.

7. Zephiran is more active at higher temperatures, presumably because the more rapidly growing bacteria are more susceptible.

8. Data on the effectiveness of zephiran imply that it contacts the organism, and is not kept off by grease films, protein coagula, closely apposing instrument surfaces, etc.

Anti-rust oil is often used on the joints of scissors and on sharp edges to protect the surfaces during storage. Failure to remove this greasy film will completely block the action of any aqueous disinfectant. Similarly, spots of fibrin or blood on inadequately cleansed instruments will wall off bacteria from disinfectants.

In contrast with the reversibility of chemical sterilization, moist heat kills

by *irreversible* protoplasmic coagulation. A recent experiment[5] in our dental school demonstrated that twenty dental burrs contaminated with saliva and detritus from dental cavities were completely sterile in both anaerobic and aerobic cultures after only sixty seconds of boiling at 100 degrees centigrade. There is no known vegetative form of any micro-organism which will survive even a few minutes of boiling at 100 degrees centigrade. The tubercle bacillus, for example, is killed by two minutes of moist heat at 65 degrees centigrade. Spores, however, are more resistant, requiring autoclaving at 120 degrees centigrade for fifteen minutes to kill practically all types. Anthrax spores are killed by boiling at 100 degrees centigrade for ten minutes. Clostridium (tetanus and gas gangrene) spores may resist 100 degrees centigrade for an hour or 5 per cent phenol for ten hours.[2]

Incontrovertibly, boiling at 100 degrees centigrade is a more effective means of sterilization than is the use of any chemical solution. Even if an indefinite amount of time is permitted for immersion in the chemical, effective contact may not be established at such areas as the joints of scissors, the interior of the capillary portion of such instruments as the erisophake, beneath any particle of organic material clinging in the teeth of the forceps, or beneath any retained film of anti-rust grease. The efficacy of boiling is unaffected by any of these factors. Unfortunately, though, corrosion of sharp edges, as illustrated in figure 2, has prevented sterilization of knives and scissors by the more effective method of boiling.

THE NATURE OF CORROSION

Corrosion in the presence of moisture receives its driving force from the inherent electrochemical tendency of the iron to enter the solution as ferrous ions.[9] The electromotive series is a list of metallic elements in the order of their relative tendency to enter solution. Elements high in the series, having a greater tendency to become cations, will enter solution in preference to elements lower in the series. A well-known practical application of this is the galvanic cell, in which plates of zinc and copper are immersed in a conducting solution and connected externally by a wire. Zinc ions will go into solution, electrons will pass through the wire from the zinc (anode) to the copper (cathode), and hydrogen ions will be freed as atomic hydrogen at the copper. (The customarily used battery terminology is the reverse of this because the external current flows in the reverse direction from the internal, and therefore the zinc pole of the battery is the cathode and the copper pole the anode. We have used reversed terminology, as it is more consistently applicable to our discussion of cathodic protection.) As another example, when iron is placed in a strong acid, the hydrogen ions, being below iron in the electromotive series, will be freed as hydrogen atoms on the surface of the iron, which gives up electrons to the hydrogen ions and enters solution as the ferrous ion. Although hydrogen ion concentration is not nearly so great in pure water as in acid, it nevertheless is great enough to cause the electrolytic corrosion of sharp edges in heated solution. Heat, of course, increases the rate of interaction of the molecules. Sharp edges, points of internal stress, or areas covered with scale or rust behave exactly as if they were higher in the electromotive series than the main body of the metal. Expressed in another way, a sharp edge is anodic to a flat surface and will therefore "dissolve," just as does zinc in the galvanic cell.

FIGURE 1.

Since it is always the anodic surface which enters solution (is corroded) and the cathodic surface which remains immune from electrochemical corrosion, the obvious method of protecting the sharp edge is to make it a cathodic surface. This may be done in two ways:

1. By galvanic protection, which consists of placing the instrument in contact with an element such as magnesium, which is higher in the electromotive series. This causes the magnesium to become the anode and was the method used in our first attempt at protecting the edge from corrosion. Although there was partial protection, we were not completely satisfied with the results obtained.

2. By cathodic protection, in which process the instrument is attached to the negative pole of a battery, and a separate piece of metal connected to the positive terminal is immersed in the same solution. The electrical current so oriented causes the surgical instrument to become a cathode, and therefore resistant to electrochemical corrosion. Just as a sharply pointed lightning rod is the most effective way of removing electrons from an electrostatically charged cloud, so a sharp edge is the most effective part of the circuit in respect to releasing electrons. As a result of this fortunate circumstance, the sharper an edge is, the greater is the amount of corrosion resistance conferred upon it by this method of cathodic protection.

Our experiments in cathodic protection were carried out in an ordinary sterilizer, modified by the addition of large metal anodes suspended along the inside walls and by the substitution of an instrument rack for the usual sterilizer tray. The instrument rack was connected to the negative pole of the battery and acted as the cathode (fig. 1). The solution used was distilled water, which, contrary to the usual belief that it is a nonelectrolyte, performed ade-

quately as an electrical conductor when hot. In most of our experiments, from 30 to 100 milliamperes of current were produced by two 1.5 volt batteries connected in series.

The following practical points should be observed in constructing and using the apparatus:

1. The anode is more effective if it presents a large surface and, therefore, should be almost as large as the sides of the sterilizer. The sterilizer walls *must* be completely insulated from the anode lest they undergo accelerated electrochemical corrosion. Since the anode slowly enters solution, it should be of monel metal (copper and nickel alloy) or some similar substance in order to avoid the reddish discoloration of the water produced by ferric ions. The conductor leading to the anode *must be insulated* throughout its course, should be soldered on with a silver type of solder, and the anode should be insulated in the immediate neighborhood of the soldered junction, otherwise the connection will be corroded off.

2. The cathodic tray is more effective if it presents a relatively small surface, with large fenestrations. The weight of the instruments alone gives adequate electrical contact, and they do not require special clips. Delicate knives are placed in a rack of conducting metal. Careful insulation of the conductor leading to the cathode and the soldered connection is not necessary as with the anode, because these parts enjoy cathodic protection. The cathodic tray must be insulated from the sterilizer walls, otherwise the current efficiency is reduced or electrical short circuits may occur.

3. As foolproof a method as possible should be devised to ensure the proper connections with the battery. Incorporation of a milliammeter in the circuit should be done to assure that current is actually passing. An alternate and more permanent method is the use of a step-down transformer and full wave rectifier. Three volts and 30 milliamperes were found to give adequate protection in our apparatus. This varies with the number of instruments being sterilized and the distance between anode and cathode. Greater protection may be obtained with higher voltage. More current passes in boiling water than in cold water.

4. Since the presence of oxygen greatly accelerates corrosion, it is desirable to bring the water to a boil to drive off dissolved gases before the instruments are placed in the sterilizer. As previously mentioned, distilled water permitted passage of about 30 milliamperes of current, which provided adequate protection. Addition of an electrolyte, such as sodium carbonate 1 per cent, would considerably increase the amount of current passage if for some reason this were desirable. Sodium carbonate (or any other alkaline salt) also appreciably reduces the tendency to corrosion, but our results have been excellent without its use, and distilled water is more readily available in hospitals than is a sodium carbonate solution. Furthermore, white deposits would form on the sterilizer walls if chemicals were in the solution.

5. Distilled water should be used rather than ordinary tap water, inasmuch as cations in solution tend to be deposited on the instruments. This tendency is more marked with prolonged boiling and excessive current passage (e.g., two hours with greater than 100 milliamperes). Such deposits may be wiped off, but with some difficulty. They are avoided by the use of distilled water and proper strength of current and time of sterilization.

6. Obviously, protection ceases when the instruments are removed from the

sterilizer. Corrosion may then occur underneath retained drops of hot water. This may be avoided by (a) immediate drying of instruments, or (b) immersion in an anti-rust germicidal solution. The latter technic prevents subsequent contamination by air-borne organisms.

Our results are best appreciated by comparing the razor blade edges in figure 2. These are microphotographs of new razor blades with an identifying scratch to localize the position of the photograph. The photographs were taken before and after fifteen minutes of boiling in distilled water under identical conditions except for the addition of the cathodic protection current as previously described. In sharp contrast to the unprotected blade, the protected edge shows essentially no corrosion damage. There is, however, a minute amount of electrolytic deposit, only visible microscopically and completely imperceptible grossly. This dramatic protective effect has been consistently reproduced in repeated boiling tests. Keratomes and cataract knives have been repeatedly boiled for four hours with no perceptible loss of sharpness as determined by their ability to penetrate a kidskin drum or as visualized by microscopic inspection.

For the past several months this cathodic protection sterilizer has been in use at the Ophthalmology Clinic of the University of Michigan. Knives and scissors are boiled from fifteen to twenty minutes. Instrument maintenance has been quite satisfactory.

It should be mentioned that in 1925 Dr. Frank Lahey[3] successfully employed heat sterilization, yet avoided corrosion of sharp instruments by devising a special sterilizer which heated liquid petrolatum to 150 degrees centigrade. Knives and scissors sterilized in this instrument for ten minutes showed no loss of sharpness or other corrosion; however, the greasiness of all the instruments and the offensive odor of the heated oil prevented this oil-sterilizer from becoming popular. Foster,[1] in 1945, successfully boiled sharp instruments in a 0.5 per cent emulsion of light petroleum oils, which deposited a protective coating on the edges. This also produced greasiness of the instruments.

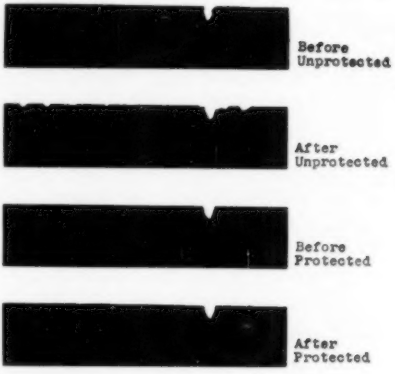

FIGURE 2.

SUMMARY

Data have been presented showing that moist heat at 100 degrees centigrade is a considerably more effective means of sterilization than is immersion in chemical germicides.

The electrochemical concept of corrosion has been outlined.

Cathodic protection has been shown to be completely successful in the prevention of corrosion of sharp instruments during their sterilization by boiling.

We are most grateful to Dr. Walter Nungester for the clear exposition of the bacteriologic data herein presented, which was the stimulus for the development of the cathodic protection sterilization process.

REFERENCES

1. Foster, J., LeMay, C. H., and Johnstone, K. I.: The corrosion of sharp-edged ophthalmic instruments, Proc. Roy. Soc. Med., 38:465-469, 1945.
2. Jordan-Burrows: Textbook of Bacteriology, ed. 15, Philadelphia, W. B. Saunders Co., 1949.
3. Lahey, Frank H., and Mason, Robert L.: Oil sterilization of edged instruments, Surg., Gynec. & Obst., 41:226-228 (Aug.) 1925.
4. Lawrence, C. A., and Grover, A.A.: Hospital sterilizing solutions, Bull. Am. Soc. Hosp. Pharm., 8:224, 1951.
5. Nungester, Walter B.: Personal communication to the author.
6. Post, M. Hayward: Prevention of infection in ophthalmic surgery; further studies, Tr. Am. Ophth. Soc., 50:295-313, 1952.
7. Rahn, Otto: Advisability of some proposed changes for the evaluation of disinfectants, J. Am. Pharm. A., 36:134-138 (May) 1947.
8. ———: Quaternary ammonium compounds, Ann. Rev. Microbiol., 1947, p. 173.
9. Speller, F.: Corrosion: Causes and Prevention, New York, McGraw-Hill Book Company, Inc., 1951.
10. Valbo, E. I., and DuBois, A. S.: The antibacterial action of surface active cations, J. Bact., 47:15-25 (Jan.) 1944.

DISCUSSION

M. Hayward Post, M.D., St. Louis, Mo.: For about thirty-five years, I have been interested in the problems of sterilization of sharp instruments. In the first paper which I published, in the American Journal of Ophthalmology, in 1928, I referred to the various methods then in use. Among these were boiling in water, heating in oil up to temperatures of 150 degrees, and immersion in chemical solutions. The boiling procedures were discarded because of corrosion, except in ideally perfect sterilizers, and heating in oil because of the danger of excessive temperature, resulting in distempering the metals of which the instruments were composed, as well as the objectionable film remaining upon them after sterilization.

Chemical solutions, therefore, seemed the most suitable medium. After ten years or more of experiment with various solutions, that referred to by the authors of the paper under discussion as being used in the eye clinics of Washington University School of Medicine since 1941 has seemed to fill the requirements of such a germicide. As far as can be determined by us, all organisms and spores tested, even in the presence of blood-encrusted instruments, have been destroyed, or at least inactivated, by this solution in four minutes time. Recently, however, reports have been accumulating from various sources that all such apparent destruction of organisms by chemical solutions is a reversible process; that apparently sterile cultures after such treatment may become reactivated, as authors point out concerning several substances commonly used in this way. They have not specifically discussed any such reaction concerning the germicidal solution which has been advocated by us. Dr. Henry F. Allen, however, working in the laboratories of the Massachusetts Eye and Ear Infirmary, has written to inform us that he has found positive cultures of a number of organisms after exposure to this solution for thirty minutes or more. Our studies of his cultures reveal the fact that they are considerably more resistant than those used in our laboratories though still, following our technic, destroyed, or at least inactivated, for a period of seven days by four minutes of exposure. Varying this technic somewhat, as suggested by Dr. Allen, failed to destroy his cultures in twenty minutes, the longest time employed in the experiment. Wherein lies the discrepancy, I do not know.

There are, apparently, many circumstances which alter the action of chemical germicides. R. C. Jordan and S. E. Jacobs, from the Physiological Department of the University College of South Wales and Monmouthshire, Cardiff, and Bacteriological Laboratory, Imperial College of Science and Technology, London, in one of a series of eleven papers on studies in "The Dynamics of Disinfection," appearing in the Journal of Hygiene, 44:210-220, 1945-46, have demonstrated that slight variation in the temperature at which exposure to the germicide takes place has resulted in a vast change upon the action of phenol on bacillus coli. (For instance, phenol 0.8 per cent, acting at a temperature of 29 degrees C. upon bacillus coli, has reduced the number of organisms from 348,400,000 to 15 in 110 minutes, while at 20 degrees C. the reduction in 125 minutes was only from 321,600,000 to 60,950,000.)

In Science, September 4, 1953 (118:274-276) an article has appeared by A. L. Erlandson, Jr., and C. A. Lawrence, titled "Inactivating Medium for Hexachloraphene (G 11) Types of Compounds and Some Substituted Phenolic Disinfectants," bringing up the same point made by the authors, that certain spe-

cific procedures and materials may neutralize the action of various chemical reagents. Many of these germicidal reagents are almost completely inactivated by certain detergents.

It is well known, furthermore, that the viability of the spores of various organisms, and even spores of the same organism, varies greatly in their resistance to chemical destruction. Illustrating the tremendous resistance of certain spores, Thomas H. Small, writing in the Medical Journal of Australia, in October 1941, concerning the effect of treating spores of bacillus subtilis in perchlorethylene under various conditions, states that it has recently been demonstrated that 160 degrees C. at 25 pounds pressure for four hours is necessary to kill spores of bacillus mesentericus.

Generally speaking, however, as the authors point out, the satisfactory results in the *clinical* application of such chemical germicides cannot be entirely brushed aside. For instance, during the period from February 1, 1944, until January 1, 1947, when the germicidal solution referred to above as being in use in the operating rooms of the McMillan Hospital was being observed for its efficiency, 742 cataract operations and 326 other intraocular procedures were carried out, using only this solution plus a 2.5 seconds dip in zephiran chloride 1:3000 for sterilizing instruments. Only one instance of purulent infection occurred, a percentage of 0.09, a figure which would appear to justify its use in intraocular operations. If, however, the germicidal potential of this solution, or any other chemical solution, can be easily destroyed by extraneous factors, there is danger in the indiscriminate use of such solutions. It, therefore, becomes most important to develop more satisfactory and reliable methods for sterilization of instruments.

The application of the principle of cathodic protection, as developed by the authors, is, on this account, of extreme interest and inestimable value. There are, however, as pointed out, certain limitations that should be borne in mind. Modification of voltage and amperage of the current employed, in conjunction with the number and size of instruments being sterilized, may cause considerable variation in the results obtained. It is, therefore, essential that such a sterilizer, with its battery and ammeter connections, be employed by an operating room staff with considerable intelligence in the handling of such instruments. It should be borne in mind, also, that plating of the instruments, as described by the authors, may be increased to a considerable extent by failure to replace the distilled water in the sterilizer at sufficiently frequent intervals, and that the same failure may also result in improper registration of the current. In a recent communication from Mr. J. F. Mason, Jr., of the Corrosion Engineering Section of the International Nickel Company, Inc., he has suggested that plating of the instruments might be avoided by the use of platinum wire in place of the Monel metal anode.

And finally, great care must be taken that the terminals are always in good condition, not only to produce the desired protection, as noted by the authors, but also to avoid the danger of sparking, which might create explosion hazards in the presence of various anesthetics in use in the operating room.

The method properly carried out, however, does unquestionably permit the sterilization of instruments by boiling without destroying their efficiency. The authors should be congratulated for having applied this procedure in a new an exciting approach to one of our greatest problems as ophthalmic surgeons. Despite a few of the complications, I feel that it has great merit, and I hope to see it made available in the way of proper, standardized apparatus to all of the profession.

I want to thank Dr. Havener, Dr. Siebert and Dr. Roper for having given me this opportunity to discuss this most interesting paper.

DR. HAVENER: I am very appreciative for all the time and effort that Dr. Post has taken to discuss the paper. The comments which he made on the fussiness of the instrument are certainly valid. The conditions under which we use it have to be just right and the staff that uses it has to be better than the student nurses I had who once connected it up backward.

The plating problem I hope to solve by some other method than a platinum anode, since they are prohibitively expensive. I understand there are some special lead ones now available.

I have been asked to discuss the technic in contrast with hot air sterilization. Hot air sterilizing is generally carried out at about 170 degrees Fahrenheit. This is generally felt to be quite adequate to kill bacteria, and I think most of the cultures have shown it works quite well. One article I have come across said that bacteria are coagulated at about the same rate as egg albumin, and if they become dehydrated first, as egg albumin might become dehydrated, they are not coagulated nearly as readily, which is one defect of dry air sterilization.

Addendum: Presently existing sterilizers may be modified to utilize the cathodic protection principle by the V. Mueller Company, Chicago, Illinois.

REPAIR OF THE FACIAL NERVE AFTER FACIAL LACERATIONS

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ANN ARBOR, MICH.

FACIAL lacerations involving the parotid gland and producing injury to the facial nerve demand special consideration. The surgical repair of the nerve is usually tedious and often difficult. However, if nerve repair is timely and well performed, the results are most gratifying. It is to be emphasized that end-to-end anastomosis or the insertion of a free graft should be used whenever possible. The facial nerve has remarkable powers of regeneration which it will exercise if provided with a pathway to the paralyzed muscles. If the patient's general condition permits of a prolonged surgical procedure, the optimum time to repair a damaged facial nerve is at the time of primary repair of the facial laceration. Late repair is sometimes necessary, but the inflammatory changes in the parotid gland render the identification of small branches of the nerve more difficult. This can be accomplished in many instances, however, to the sincere satisfaction of the patient.

Undue delay called "watchful waiting to determine whether or not the facial nerve has been injured permanently" courts disaster and may condemn the patient to a life of embarrassing deformity. If the facial paralysis is noted immediately after the laceration, and usually it will be, exploration to determine the exact type of injury is indicated. If for one reason or another exploration has been delayed, it must be remembered that the longer the delay has been, the poorer the results of repair will be. Some fibrosis of paralyzed facial muscles occurs in a year; after this the change is more rapidly progressive, militating against a good functional result from any type of nerve repair. If the muscles are still contractile, as demonstrated by galvanic stimulation, and therefore receptive to nervous stimuli, direct repair by end-to-end anastomosis or the insertion of a free graft is the procedure of choice. Substitution anastomosis, utilizing the spinal accessory or the hypoglossal nerves, has little or no place in this field. If the nerve has been severed at the stylomastoid foramen, the proximal stump may be found in the fallopian canal after removing the mastoid tip. Substitution anastomosis should be reserved for those patients in whom the facial nerve has been severed intracranially. Even in such instances a graft has been used successfully when an adequate stump has been left on the pons, as accomplished by Dott and reported to Lathrop.[1]

When fibrosis of the facial muscles has become far advanced, or when the laceration has involved extensively the musculature about the eye or mouth, plastic procedures utilizing fascial strips or the muscles of mastication to elevate the sagging features offer the only help available.

Examples of delayed repair of severed facial nerves are presented here to demonstrate some of the problems encountered in these operations. This

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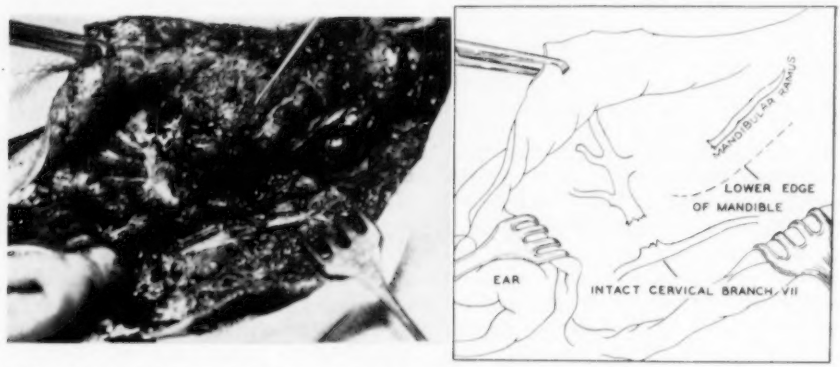

FIG. 1—Case 1. Photograph and diagram showing the severed nerve ends after debridement of the wound.

is essentially a supplement to a previous report in which another group of patients was presented.[2]

REPORT OF CASES

Case 1

This patient, a white male, aged 25, sustained a severe neck laceration on December 2, 1951. On admission to the hospital he had a gaping submandibular wound extending from the midportion of the body of the mandible on the left, through the left submaxillary region, across the hyoid, through the right submaxillary area, then superiorly over the mastoid. There was paralysis of the right side of the face and tongue. Primary wound suture was performed promptly at which time the seventh nerve was not isolated.

A secondary operation was done on December 5, 1951. At this time the patient had trismus and a parotid salivary fistula. The wound was reopened and the facial nerve isolated at the main trunk. There was a very large cervical branch which was intact but the other branches of the pes anserina had been severed (fig. 1). The zygomatic branch was isolated distally and then traced backward to the region of the severed pes. The intact cervical branch was then severed and united to the remaining stump of the pes anserina. There was a dehiscence in the mandibular ramus which required the insertion of a free graft (fig. 2).

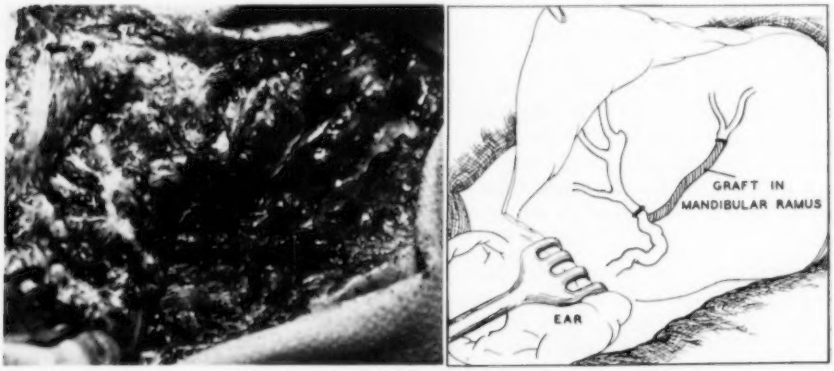

FIG. 2—Case 1. Photograph and diagram showing reconstruction of pes anserina and free graft in the mandibular ramus.

FIG. 3—Case 1. Photographs showing muscle function fifteen months after nerve repair.

The main trunk of the hypoglossal nerve was intact but its branches had been disrupted as they entered the tongue muscle.

The postoperative photographs (fig. 3) were taken on March 6, 1953, fifteen months after the nerve repair.

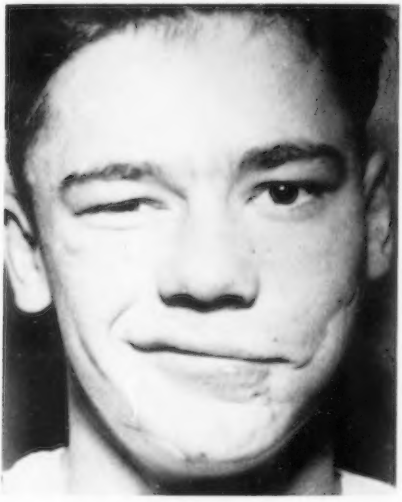

FIG. 4—Case 2. Preoperative photograph.

Case 2

This patient, a white male, aged 17 years, was examined at University Hospital on November 6, 1951. On October 20, 1951, he had suffered a severe laceration of the left side of his face in an automobile accident. He was reported to have been unconscious for three or four hours but had no residual neurological symptoms. Prompt suture of the wound had been accomplished under general anesthesia.

On admission to the University Hospital examination revealed multiple recent scars on the left side of the patient's face. Most prominent was a long irregular scar from the tragus of the left ear to the corner of the mouth on the same side. Also, as noted in the preoperative photograph (fig. 4), there was a scar on the left side of the lower lip and lesser scars on the right side of the face. Motion of the lower lip and action of the platysma indicated that the mandibular ramus and the cervical branch of the facial nerve were intact. There was no function of any of the facial muscles above the lower lip. Neurological and general physical examinations demonstrated no pathologic changes other than the fascia paralysis.

An operation was performed on November 28, 1951. The old diagonal wound across the left cheek from the tragus to the corner of

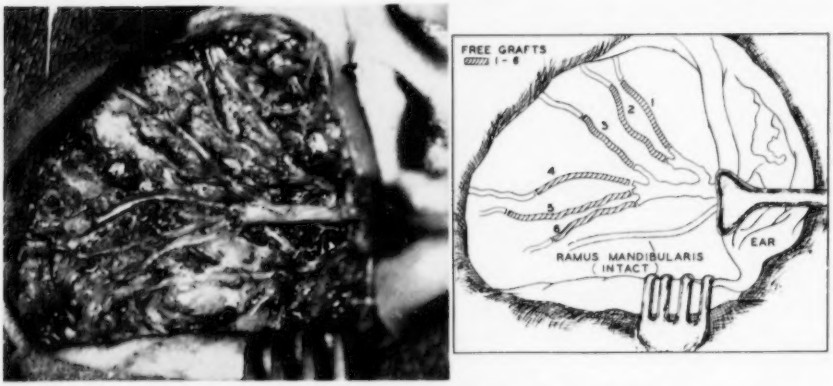

FIG. 5—Case 2. Photograph with explanatory diagram showing multiple nerve grafts sutured in place.

the mouth was reopened and the hypertrophic scar excised. When the skin edges were elevated, it was found that the parotid gland contained a mass of scar tissue which made identification and isolation of the branches of the facial nerve difficult. The mandibular ramus of the nerve was found to be intact but all of the branches superior to it had been severed. After debridement, six free grafts were used to repair the six severed branches of the nerve which had been identified (fig. 5). The great auricular nerve on each side of the neck served to supply these grafts.

The patient's convalescence was uneventful and he was discharged from the hospital seven days after the operation.

On March 24, 1952, four months after the nerve repair, examination revealed good tone of the facial muscles which seemed to presage

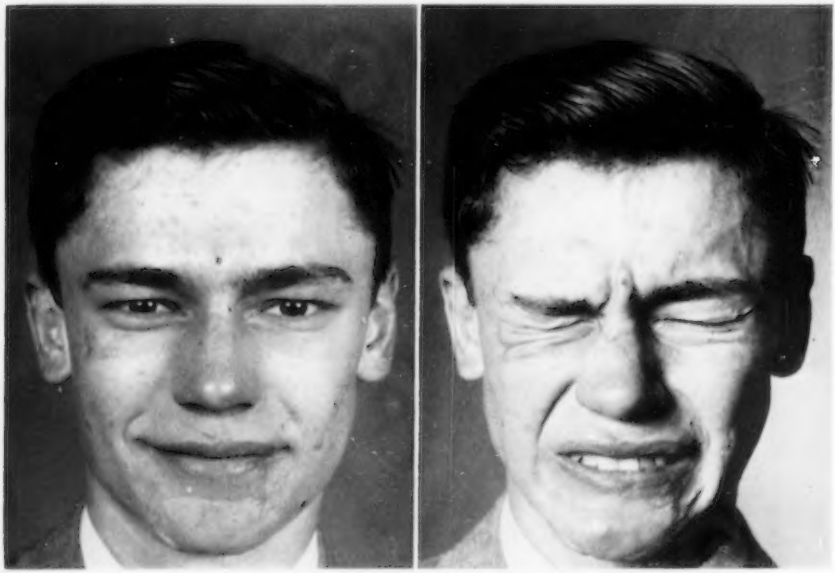

FIG. 6—Case 2. Photographs taken December 15, 1952, twelve and one-half months after operation.

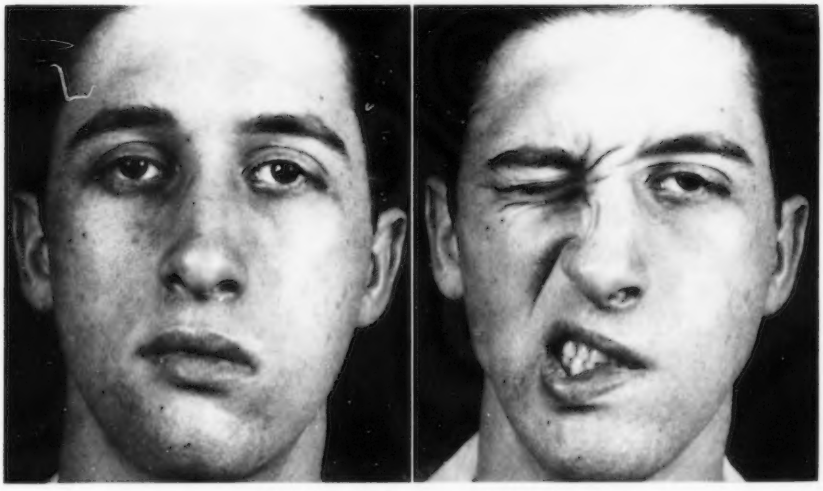

FIG. 7—Case 3. Preoperative photographs.

return of function. The patient had not been aware of any movement of the facial muscles, but very slight movement in the upper lip was detected.

This patient was not seen again until December 15, 1952 (twelve and one-half months after operation), when he said that return of motion of his face had taken place during the preceding summer. His general condition was excellent and the result of the nerve repair was most gratifying. The function of the frontalis muscle was minimal but present to some degree. The function of the other muscles is demonstrated in the photographs taken on December 15, 1952 (fig. 6).

The most interesting feature of this case is the minimum of mass motion; far less, in fact, than is seen after most nerve repairs involving the main trunk. In all probability this is due to the lessened opportunity for axonal confusion during regeneration through the grafts in the individual branches of the nerve.

Case 3

This patient, a white male, aged 28, was examined at University Hospital on March 12, 1953. The history was that of a parotid tumor removed in 1946 and then a recurrent tumor removed in 1951. These were reported as benign mixed tumors. Another recurrence

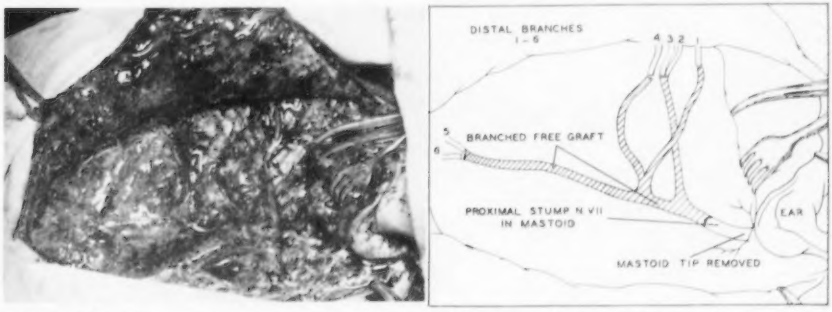

FIG. 8—Case 3. Photograph and explanatory diagram of the branched nerve graft sutured in place. The branch united to distal stump no. 1 was used in this position because of its small size.

FIG. 9—Case 3. Photographs taken in June, 1954, fourteen months after operation. Evidence of nerve regeneration was not apparent at the time this paper was presented in October 1953.

was noted in March 1952; and in July of that year a total parotidectomy with sacrifice of the facial nerve was performed. The histologic diagnosis was "recurrent mixed tumor, histologically benign." The facial paralysis is apparent in the preoperative photographs (fig. 7).

An operation to repair the facial nerve by use of a free graft was undertaken on April 10, 1953, which was nine months after the total parotidectomy. Six peripheral branches were isolated rather far forward in the cheek. It was necessary to remove the mastoid tip to free the proximal stump of the nerve. A four-branch graft from the sensory cervical plexus was utilized to accomplish repair. The graft in position is shown in figure 8.

The patient was examined on September 25, 1953, five months after operation, at which time there was no evidence of muscle movement.

On December 22, 1953 it was noted that there was less sagging of the paralyzed side of the face, indicating improved muscle tone. The patient could retract the corner of the mouth slightly and could produce a slight contraction of muscles in the lower eyelid. Improvement continued during the next few months. The postoperative photographs (fig. 9) were taken in June, 1954.

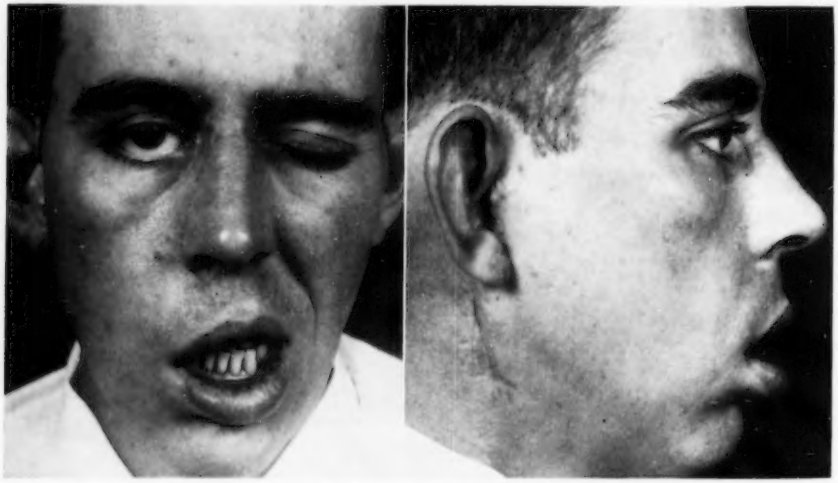

FIG. 10—Case 4. Preoperative photographs.

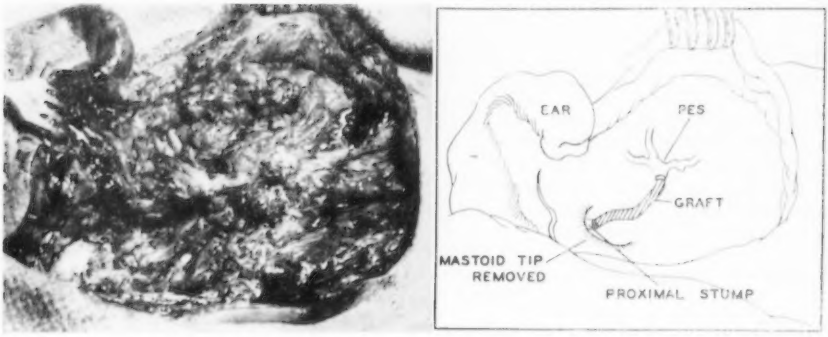

FIG. 11—Case 4. Photograph and diagram at operation showing nerve graft.

Case 4

This patient, a white male, aged 27, was examined in University Hospital on September 21, 1953. He had sustained a severe laceration to the right ear and neck on June 24, 1953 when a heavy angle iron had dropped from about fifty feet above him striking his head and shoulder. In addition to a broken clavicle and injured shoulder, he had a complete right peripheral facial paralysis, paralysis of the right side of the tongue, and paralysis of the right sternomastoid muscle (fig. 10).

On September 23, 1953, an operation to repair the injured facial nerve was performed. After the superficial lobe of the parotid gland had been removed, it was found that there was a large dehiscence in the main trunk of the

FIG. 12—Case 4. Photographs taken August 17, 1954, showing functional result eleven months after operation. When this paper was presented in October 1953, there was, of course, no evidence of nerve regeneration.

nerve and a dense mass of scar tissue in the region between the mastoid tip and the ramus of the mandible. Apparently it was in this area that the hypoglossal and spinal accessory nerves had been injured. The mastoid tip was removed to obtain a clean proximal stump of the facial nerve, and a free graft 3.5 cm. long taken from the great auricular nerve was sutured in place as shown in figure 11.

The first sign of any regeneration was noted on April 2, 1954, at which time there was the slightest suggestion of a little motion at the angle of the mouth. It was noted also that there was some returning function of the tongue muscles and of the right sternomastoid muscle.

By August 17, 1954, there was evidence of further improvement (fig. 12). This is probably too brief a period of time to permit maximum recovery. It is to be hoped that there will be further return of function in the next few months. At this time the patient has fair ability to retract the corner of his mouth but he cannot close his eye completely.

REFERENCES

1. Lathrop, Frank D.: Personal communication to the author.
2. Maxwell, James H.: Extra-temporal repair of the facial nerve; case reports, Ann. Otol., Rhin. & Laryng., 60:1114-1144 (Dec.) 1951.

DISCUSSION

FRANK D. LATHROP, M.D., Boston, Mass.: I want to compliment Dr. Maxwell on the excellent results he has obtained through utilization of nerve grafts to repair the facial nerve distal to the stylomastoid foramen. I should like to emphasize Dr. Maxwell's statement that it is much easier and more satisfactory to repair the facial nerve at the same time the initial operative procedure upon the face is accomplished than it is several months later.

Most of my experience has been in the field of tumor surgery. At the Lahey Clinic the facial nerve is sacrificed whenever it is believed necessary for the eradication of a malignant neoplasm of the parotid gland. Whereas the resultant facial paralysis was formerly improved by plastic surgery, we now find it better to correct the defect created in the facial nerve with multiple branched autogenous nerve grafts in order to prevent the hideous deformity of the face.

Before any surgery is accomplished, a careful evaluation of the patient should be made. A plan of action should be evolved and, if it is thought that the facial nerve may be sacrificed, the surgical procedure should be so organized that the repair of the facial nerve can be facilitated at that time if it is believed to be feasible. In one case in which an adenocarcinoma of the parotid gland was totally excised, since the overlying skin was involved, it likewise was sacrificed. As the operation progressed, the branches of the facial nerve distal to the parotid were isolated and marked with black silk material. At the completion of the operation the wound was packed, and subsequently, a week later, a nerve graft was utilized.

In another case in which a carcinoma involved the mastoid process as well as the parotid gland and overlying skin, the tumor was removed in its entirety and, with it, the involved facial nerve. Careful search was made of the femoral cutaneous nerves for a suitable branched graft, and this was inserted in the defect of the facial nerve from just below the horizontal semicircular canal to course anteriorly across the parotid area and to be sutured to the anterior branches. The patient's face in repose and grimacing demonstrates that satisfactory voluntary movement was obtained of the formerly completely paralyzed side of the face.

In another case the patient had a mixed tumor which was not malignant, but for some reason the nerve was so wrapped up in the tumor that it was impossible to dissect the nerve out and not leave tumor cells behind. Consequently, the facial nerve was sacrificed and a multiple branch graft was utilized to relieve the facial palsy. A satisfactory result was obtained.

The only suggestion I have to make in addition to Dr. Maxwell's discussion is that when nerve grafts are utilized or an end-to-end suture is used, it is very important that the ends that are to be sutured together are not imbricated by tying the suture too tightly. The suture should be just tight enough to bring the ends together.

THE DEVIATED NOSE AND SEPTUM: A PANEL DISCUSSION

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DR. CONVERSE: The idea of this panel is to bring together a group of men working on the same problem in various teaching institutions. Dr. Edgar M. Holmes is in charge of plastic surgery at the Massachusetts Eye and Ear Infirmary, and Dr. William C. Huffman is in charge of plastic surgery at the University of Iowa Hospitals. I work at the Manhattan Eye, Ear and Throat Hospital.

The problem we are going to discuss is one of primary interest to the otolaryngologist because it deals with a dual problem: one that is functional and also cosmetic.

In most of these cases, unless the surgeon who is operating upon this particular type of deviated septum also operates upon the external nose, the functional result will not be good. So I think perhaps the first thing we ought to consider is what sort of cases we are dealing with.

Dr. Huffman will discuss the types of nasal and septal deviations.

DR. HUFFMAN: I think before we begin the discussion it might be only fair to explain some of our terminology. When we speak of the internal nasal skeleton, we are speaking only of the nasal septum. When we speak of the external nasal skeleton, we are speaking of the nasal bones and the upper and lower lateral cartilage. We will make no particular attempt to speak of the congenitally imperfect nose, but only of the nose that is twisted from old trauma or from old trauma followed by faulty development.

In our experience the nose that is deviated nearly always has architectural faults, both internally and externally; that is, both in the septum and in the external nasal skeleton, but in discussing the deviated nose it is simpler if we consider only the external or the internal skeleton at one time. So I would like to present the different types of nasal deviation that we see in the reverse order of their frequency.

First, I shall discuss deviations that have faults only to the external nasal skeleton, deviations limited to faults in the septum, and nasal deviations with structural defects both inside and outside the nose. Then if we have time I should like to show a few special problems complicating the deviated nose.

Probably the simplest type of nasal deviation is one in which only the external nose is involved and in which there is irregular deviation of the nose on one side or the other. We have the feeling when looking at such a nose that there is not too much deformity per se in the upper and lower level cartilages,*

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*Two anatomic terminologies are currently employed. The lateral cartilage is also designated as the upper lateral cartilage and the alar cartilage as the lower lateral cartilage.

and they are carried to one side of the midline only because they are attached to the nasal bones which have been pushed to one side or the other.

There is another variation of the same type of deformity, one that is limited to the external nose, in which the whole nose is deviated in an irregular manner and in addition there is a hump present. As a rule, this type of nose is more easily corrected than the type without a hump, since unequal removal of the hump will allow the operator room in which to maneuver and mobilize the structures to the midline.

Occasionally we see a nose in which it appears that only the nasal bones are deviated. The upper and lower lateral cartilages are in the midline. Of course, here the simplest thing is to replace the nasal bones in the midline, allowing the upper and lower lateral cartilages to remain in the position in which they were originally.

Displacement laterally of the nasal bones and of the lateral cartilages with the midline of the nose lying close to the midsagittal line of the face may occur. Surgical correction is about the same as in the previous problem.

We now come to those external deviations apparently due solely, or in large part, to a deformity in the underlying septum. Straightening the septum will allow the external nose to assume the normal midline position. Of course, in such a deformity if the external nose itself has very little or no deformity, there will be no deviation of the nasal bones. We may have a case in which only the upper lateral cartilage on one side deviates from the midline. Such a condition is often due to a C-shaped deformity of the underlying septum, and simple crushing will allow the upper lateral cartilages to fall back into the midline.

The same sort of problem may occur with the nasal bones lying in the midline. This time the deviation of the upper lateral cartilages is accompanied by a deviation of the lower lateral.

We believe that in cases where only the tip of the nose is deflected from the midline, unless there is a loss of soft tissue and trauma, practically speaking there can be no such nasal tip deviation without dislocation of the caudal end of the septal cartilage. This is probably the most common nasal deviation. It is probably the one that is most easily corrected. Usually all that is required is replacement of the septal cartilage back somewhere near the midline, aided perhaps by trimming of the lower lateral cartilage.

We come now to two special problems. One such is that case in which there is extreme bony deviation, so far to one side of the midline or the other that one fears that one osteotomy cut will be so much wider than the other that there will be a tendency of the nose to swing back away from the midline. Here some bone may be taken from the hump or a piece of bone taken as a wedge from the osteotomy cut on the other side.

We may find a nasal deviation that is accompanied by a hump and an apparent cartilaginous saddle. Probably the easiest and best approach to a problem such as this is removal of the hump down to the level of the apparent saddling and then continuing with lateral osteotomy and replacement of the dorsum in the midline position.

Another deviated nose is that accompanied by an apparent or an actual bony hump and an actual saddling and elongation of the nose. These conditions can be handled by an excision of the hump down to the desired level, moving the hump down to fill in the cartilaginous depression and, of course, doing a lateral osteotomy to straighten the nose.

We now come to the nose that we call the "beat-up" nose. This nose has prob-

ably been fractured three, four, five or six times. There have been one or more submucous resections performed on it, sometimes a little too generously, and oftentimes the submucous resections have caused further deformity. The nose will now be deviated far away from the midline. There will often be an actual bony hump and an actual deep cartilaginous saddling. Of course all internal support has been lost. Such a nose as this will often present a problem of total construction rather than reconstruction. We have in several cases of this type repaired the bony hump down to the level of the actual saddling, so that the patient has a real saddle nose all the way from the nasal cartilage down to the level of the upper lateral cartilage. Doing a lateral osteotomy, we get the nose in the midline and narrow at the tip; later this saddle is corrected with an iliac bone graft.

DR. CONVERSE: That is a very interesting review, Dr. Huffman. I should like to go over just a few of the points you brought up. Some of the cases you showed on slides had tremendous deviations. I think that in classifying nasal deviations we can say that some are congenital in origin and some fit into what we might call the developmental type. These are cases of injuries in infancy or early childhood; as the nose develops, very frequently the deformity increases. It is difficult to say whether a deformity is congenital in origin or due to injury in early childhood in certain cases. But there is a very definite type of nasal deviation which is hereditary. For example, dislocation from one side of the caudal portion of the septal cartilage is frequently seen in families, so it must be a hereditary or congenital type of nasal deviation.

We find, therefore, that we can classify all types in three categories: one is congenital, one is the so-called developmental type, and the third is the acquired type in adulthood or adolescence, really a malunited fracture.

Then it seemed to me that you were talking about two other variations, one in which the septal cartilage itself still was supporting the lower nose. You showed one or two cases, I thought, that were very interesting from the standpoint of showing the influence of the septum itself on the shaping of the lower nose and how deviations of the dorsal portion of the septum can really bring about a deformity. In other cases you showed examples in which the septum had lost all supportive value. It was crushed and it was necessary to restore the dorsal support to the nose.

(Slide) This is a deviation of the developmental type. The black line along the dorsum represents the septal line, and the septum is over to the side. This is very similar, I think, to one of the cases Dr. Huffman showed. The lateral cartilage on the right is wider than the lateral cartilage on the left. There is asymmetry of the tip, due to the protrusion of the lower part of the septum underneath the left alar cartilage. Because of displacement of septal cartilage from its normal position there is a depression of the tip which is a pseudo-hump. It is not a true hump. I noticed that Dr. Huffman had some cases very illustrative of that condition. It is a depression over the tip that causes a false protrusion of the nasal bones.

Dr. Holmes, would you like to take the microphone now?

DR. HOLMES: This brings in several points for correction. When we have a deviated nose of this sort, it presents many problems. One is the straightening of the nasal bones, a correction of the asymmetric tip and a correction of the asymmetric two upper laterals. You will also notice the marked asymmetry

of the lateral cartilage. One is much higher than the other. All of that must be brought into consideration and each factor considered individually in the correction.

One man presented a traumatic deformity in which the tip of the nasal bone had been displaced to his right. There was marked angulation of the septum, marked irregularity of the tip cartilages, a flattening in this area and a bulging on the other side. His profile was not too objectionable and yet he had a moderately oversized nose with a slightly drooping tip. The tip of the nasal bone was displaced to the right. The nasal bones themselves were intact, but there was a pulling away of the lateral cartilage from the pyriform sinus, and a narrowing and a buckling on that side. Let me mention that in correcting these cases, if we bring the dorsum to the midline and do not separate between the pyriform margin and the cartilaginous tissue on both sides, there is a tendency to pull the cartilage back to the right again. To correct this, routine exposure of the dorsum is made, as for rhinoplasty. The hump is removed in any manner you wish. The lateral cartilage is freed from the septum and the nose is opened up.

When we open up the vestibule and look into the nose at the septum we notice that we have a marked concavity on one side. If we had to maintain that and to straighten it by many crosshatches in the septum, it would have a tendency to buckle again. When we have an oversized nose we can shorten the septal cartilage thus reducing the amount of deviated cartilage. This gives us merely a moderate bend in the septum which is also dislocated from the vomer groove. Osteotomy is done on either side and dissection, which I mentioned previously, to permit the lateral cartilage to assume a new position.

I wish to point out two or three things with regard to correction of the septum dislocated from the vomer groove. Whenever we have a septum dislocated from the vomer groove we invariably have a mass of scar tissue on the concave side. Just the other day I did one which was at least a quarter of an inch thick. To correct that we approached submucously with our rhinoplasty, through a transfixion incision, making an incision submucously from the base up through to the top, leaving the fibrous tissue in contact with the septal cartilage, which later was dissected free and taken out, leaving a space. Theoretically, it is ideal to separate the mucosa from the undermargin of the cartilage, to bring it back and put it in the vomer. Practically that is sometimes impossible because the vomer groove may be obliterated and it is difficult to dissect.

I usually like to cut through with a sharp knife throughout the length of this structure, which we maintain, bring it back into the midline, suture it in place around the anterior nasal spine with a through and through stitch.

This is what we do to the septum in the badly deviated case. Bone and cartilage have been removed. Then we do a complete submucous resection. That leaves an angulation at the tip of the nasal bones, and angulation and displacement at the vomer ridge. I mentioned previously the correction of the dislocation of the septum at this point. To correct the deviation of the septal cartilage, if it is just an angulation at the tip, our problem is an easy one. I separate the mucosa all the way up to the dorsum on one side, exposing the cartilage. Then cutting through from the tip of the remaining nasal bone, tangentially down instead of directly across, we retain a support for the cartilaginous septum which prevents the dorsum from sagging in. This is the

only thing that supports the septal cartilage. The lateral cartilages do not support it.

If we have a general bend in the remaining cartilage, a bend from the tip of the nasal bones all the way down to the attachment with the premaxilla, it may be necessary to make several cuts. The alar cartilages are corrected to create asymmetry in the lateral view with a more pleasing profile. When we have a complete deviation of the nasal bones, the same procedure is carried out except that we do the lateral osteotomy to bring the nasal bones to the midline.

I think that covers fairly well the problems involved in these deviated lateral noses. It is not just bringing the septum into the midline and the nasal bones, but it involves the lateral cartilages, the alar cartilages, the septum—the entire anatomical structure.

DR. CONVERSE: Thank you, Dr. Holmes.

We have already discussed the treatment. Two points came out that I thought were very interesting in your presentation of the treatment of the septum, your method of straightening the dislocated septum, and I think we should perhaps have a little discussion about the treatment of the septum.

I think, Dr. Holmes, you did not stress it but just took it more or less for granted that in these deviated noses and septums you favor doing the septal operation at the same time as the nasal operation.

DR. HOLMES: Whenever you have a deviation of the tip of the nose it is rather difficult to realign the nasal bones and the septal tip without doing a submucous resection at the same time. I invariably do the rhinoplasty first down to the removal of the hump, and then the correction and elevation of the tip. Then I do my submucous resection through the transfixion incision, to permit the alignment of the dorsal and the anterior grafts. I do them at the same time instead of submitting the patient to two separate operations, which is unnecessary.

DR. CONVERSE: Then having done your submucous resection you go on to the nasal plastic procedure. In this way you do the two operations in the same session. Of course, there is a great deal to be said for that because I do not think that in most cases you can straighten the external nose unless you straighten the septum.

Dr. Huffman, how do you feel about that subject?

DR. HUFFMAN: I think that all depends on what is present and has to be handled. Of course, the straightening of the nose externally and the straightening of the septum at one operation does save the patient one hospitalization and one operation. However, if there is very much to be done on both the inside and the outside, I still have the somewhat cowardly feeling that with all the supporting nose being called upon to heal at one time, the end result as far as the cosmetic appearance is concerned is about 20 per cent less predictable than if they are done one at a time. There are cases, as Dr. Converse says, where it is absolutely impossible to straighten the outside of the nose without doing something to the septum and getting it out of the way, so that the nose can be mechanically shifted back into the center of the face.

I should like to add to that and to say that there are other cases in which the septum cannot be straightened because there is not enough room inside the nose to move it around without straightening the external nose. So then if you come to the place where you are not going to do both the internal skeleton and

the external skeleton at one time, the problem arises which will be done first. There are three views on that and they are all held to tightly by those who hold them. There are those who state in the literature that the septum should always be done first; others state that the external nose should always be done first, and still others feel both procedures should be done concomitantly. I think it all depends on whether the septum will keep the external nose from being moved. If so, then the septum will be done first. If the external nose is so far deviated, it keeps the nasal septum from being shifted and vice versa.

The only drawback about doing the nose in two stages is that once a patient has had his nose operated on, either the septum or the external nose, we find that he is more than a little reluctant to come back six months or a year later and submit to having another operation and having the nose packed for several days. So practically, I think whenever possible it is best to try to do both the nose and the septum at the same time and just resign ourselves to the fact that the final appearance is not quite as good as if done in two separate stages.

DR. CONVERSE: Well, Dr. Holmes, having placed your submucous resection at the stage you placed it, that is, after resection of the hump, would you like to give your reason for doing that?

DR. HOLMES: If one does a submucous resection first, before he has elevated the tip or shortened the dorsum, he loses supporting cartilage which he may need later on. If you first perform the external correction to the point where you have corrected the ala and elevated the tip, you then have all the remaining cartilage present which you can use. Then you can go through the transfixion and save as much support as you wish. If you have a terribly angulated cartilage that you find you cannot straighten, you invariably can secure sufficient flat cartilage farther back, or even some of the vomer bone to insert between the medial crus of the lateral cartilage and the pterygoid supportive tip.

DR. CONVERSE: I think, as Dr. Holmes said, the important thing is that very frequently in these cases, as was well shown in the cases that Dr. Huffman had, there is a hump to be excised, and with the hump, of course, we do remove a portion of the septal cartilage. So that it is most important to do the submucous work on the septum after you know how much cartilage you have left.

Perhaps we could now say a few words about the various procedures used to straighten the septum. I think these could be grossly classified into two groups, the radical and the conservative ones.

Supposing you have a septum to straighten and, of course, one of these combination procedures at your disposal to obtain that straightening. You showed us, Dr. Holmes, an example of a conservative method. You did a submucous resection in the usual way and then you straightened the remaining anterior portion of the septum by making incisions in it, and you anchored the portion that joins the vomer with a suture, which I think is a very nice way of doing it. But there are some cases, perhaps, in which such a conservative procedure does not suffice. We find that we have to resort to even more radical procedures. Would you like to say a word about that?

DR. HOLMES: By that you mean, I think, where we have to remove all of our supporting cartilage and transplant some cartilage or bone which we have taken out posteriorly. Is that what you are referring to?

DR. CONVERSE: That is right.

DR. HOLMES: In individuals who have had a marked crushing blow to the nose with a buckling of the septum, we frequently have not only one layer but two and sometimes three layers of cartilage. When that case is found, it is impossible to straighten the anterior part of the septum to permit adequate airway and to have any support left. So in those cases we usually remove the entire block of septum anteriorly saving, if we can, one layer of cartilage which may be freed in the middle and sutured in place. To support that remaining piece of cartilage, which in turn will hold the tip up, we must take some cartilage posteriorly if it is available. If not, we will even take a thin portion of the bone, which we will attach to the anterior nasal spine and bring it up between the medial crura of the ala. We could use preserved cartilage, but that tends to be absorbed, so we avoid it except as the last resort.

DR. CONVERSE: I think there is another point that should be brought up, too. In certain traumatic deviations—and there were a couple of cases shown by Dr. Huffman—septum support has been lost because the septum has been crushed and fractured. You press the lower dorsum of the nose and it flattens down; you press the tip down and there is no support. In such a case it does not matter if you remove the entire septal framework, it has lost its supportive value. But in cases where the septum still has a supportive function and where it is merely deviated, we have to extend the resection right up to the dorsum and remove all the septal cartilage, and sometimes use that septal cartilage as a free transplant along the dorsum of the nose to give support.

I think that all the surgeons who work on the nose have pet operations for the anteriorly dislocated septal cartilage, and I am sure there have been as many operations devised as surgeons who have performed this type of surgery. But there is a category of these cases, at least in my experience and I should like to have the opinion of my colleagues here, in which no matter what type of conservative procedure you do, it seems to me that the septum keeps dislocating. I have found that in some of those cases I have to take it all out. Then in order to remedy lack of support in the columella, there may be postoperatively a backward traction of the base of the columella. In such cases I simply transplant cartilage into the columella through a small incision made along the anterior margin of the medial crus of the alar cartilage, using a piece of septal cartilage, extending it downward in front of the nasal spine, and I have found this procedure has given excellent results.

Dr. Huffman, do you agree that in some of these cases all the septal cartilage may have to be taken out, that you cannot always correct the anterior dislocation of the septal cartilage by conservative means?

DR. HUFFMAN: Before I answer that I should like to make a point. Both Dr. Converse and Dr. Holmes have already made the point in an indirect fashion. I think it is dangerous for one to have a favorite way of straightening the septum. In some cases a rather generous submucous resection will cause the central portion of the septum to be so weakened it will not hold the nose in position and it will cause the nose to collapse. So I think that one will have to bear in mind that in doing a submucous resection he may have to do a partial resection, cross-hatching, shaving, fracturing to get the septum into the midline, or in some cases he may have to remove the septal cartilage entirely and put it back as a free graft.

Dr. Converse asked under what conditions we thought we would have to remove all of the caudal end of the septum. I think probably the most strongly indicated condition for removal of all of the caudal end of the septum is when there is practically no caudal end of the septum. When the trauma has been so severe or so repeated that the cartilage in the lower part of the septum has become entangled and is a mass of small cartilage, fibrous tissues, etc., widening and thickening the lower part of the septum and obstructing the airway on both sides, there is no way in the world that one could untangle such minute pieces of cartilage and try to put them back in a normal position. The only way that I know of to deal with such a case is to resect all of that fibrous tissue and cartilage and then go back further into the septum and find a piece of cartilage that is half a centimeter wide along the tip of the nose and put that in as a free graft to try to prevent or to correct retraction of the columella.

DR. CONVERSE: Thank you, Dr. Huffman. There are many points we could discuss on this subject. There is one point, however, that I think is important, and I find in speaking at various meetings this question is frequently asked about children: What do you do about a child with a deviated nose and septum and nasal obstruction? We know that in the past it has been presumed (I don't know on what evidence) that an operative procedure upon the septum of the child would interfere with the growth of the nose. Trauma, as you know, interferes with growth, and the noses of most children who have trauma in early childhood fail to develop in a normal way.

Dr. Holmes, how do you feel about this problem of children?

DR. HOLMES: When a child hurts his nose in falling, it is usually the septum and not the nasal bone that is broken. There is a buckling of the anterior portion with a dislocation from the vomer groove with complete obstruction of one side with fair breathing on the other side. If that child is able to get along without subjective symptoms; if he is not having recurrent colds, sinusitis on one side, I like to leave it alone until he is large enough so that we can work on him easily. If he has obstruction on one side with no breathing, poor drainage, recurrent colds, or sinusitis, then I feel that we should go ahead and do one of two things. We can elevate the mucosa on one side of the septum as in the submucous resection. Occasionally we can free that dislocated portion and push it toward the middle. That is not too satisfactory, but it can be worked in some cases. The other thing is to do a complete septum operation, straighten the anterior part of the nose and even bring the tip up into a more normal position.

I like to wait on those usually until about the age of 7 because it is much easier to do them. I think that may answer the question. One other thing, I don't think there is any material change —I have followed several boys I have done this on—in the development of their noses later on. It used to be considered, as Dr. Converse said, that there was an interference with the growth center which, of course, is in the anterior part of the septum.

DR. CONVERSE: Of course ideally it would be best to repair these deformities in children as early as possible. It is always best for psychological reasons to repair deformity early. However, this is not always possible. The answer that I usually give to the question which I asked Dr. Holmes is that in our clinic we like to consider the problem of the

child the following way: If he has really severe nasal obstruction, we do what is necessary to relieve that nasal obstruction. It may be that a conservative procedure like the one that Dr. Holmes has described will suffice. It may, on the other hand, require a complete submucous resection; and in some cases even osteotomy and straightening the external nose may be necessary.

SUMMARY

I should just like to try to summarize very briefly some of the points that we have talked about. First of all, the classification of the nasal deviation: congenital, acquired in infancy, with developmental changes, and deviations acquired in adulthood. The importance of the septum; the desirability in most cases of doing the septum operation and the operation on the external nose in the same operative session. And some of the points that we have discussed about the possibility of using the septal cartilage as a means of support in those cases where support has been lost.

METHOD OF ESTIMATING VISUAL ACUITY IN A YOUNG CHILD

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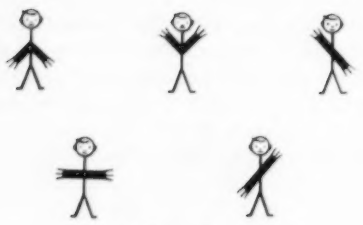

FIGURE 1.

THE illiterate E can be used fairly satisfactorily in testing visual acuity in a five year old child. In order to test the visual acuity in a three or four year old, a chart of greater simplicity is necessary.

In an attempt to obtain such a chart, the following two symbols have been constructed: in one symbol the difference in the target consists of variable positions of the arms; the other target consists of an outline of a hand.

In the first chart, the arms are arranged at different angles and the child is asked to put his arms in the same position (fig. 1). In using the second chart, a hand is rotated in different positions and the child is asked to place his hand in corresponding positions (fig. 2). Although the targets do not correspond to the Snellen measurements, they approximate these measurements and give some indication as to the visual acuity. More important, they give a comparison of the visual acuity of the two eyes.

FIGURE 2.

On the back of each chart are instructions for use.

Presented as a *New Technic* at the Fifty-Eighth Annual Session of the American Academy of Ophthalmology and Otolaryngology, Oct. 11-16, 1953, Chicago, Ill.

DESCRIPTION OF THE CHAMLIN PERIMETER

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FIG. 1—The Chamlin perimeter.

FIG. 2—The chin rest position.

THE Chamlin perimeter (fig. 1) is a combination perimeter and chin rest, for use with the tangent screen.* The arc can be rotated continuously through 360 degrees, and it clicks into the 30 degree position. However, it can be stopped at any point in its rotation without slipping. The illumination comes from a variable filter underneath the chin rest. This is a fixed source of illumination and does not rotate with the arc. By varying the transmission of light through a filter, the illumination is constant throughout that portion of the potential sphere utilized in testing visual fields. The light, being placed medially, gives exactly the same amount of illumination on the nasal and temporal sides of the arc when it is in the vertical position, thus giving more exact comparisons of vision on the nasal and temporal side, as in testing for hemianopic defects.

By releasing a small knob, the entire arc can be swung aside, and the rest of the machine, including the eyepiece and chin rest, remains *in situ*, to be used as a chin rest for tangent screen study (fig. 2). This device enables the single instrument to be used as a perimeter (fig. 3) and for the tangent screen, and does away with the use of the ophthalmic table for supporting the usual type of perimeter.

*Manufactured by the E. B. Meyrowitz Co., 520 Fifth Ave., New York.

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FIG. 3—The perimeter position.

FIG. 4—Positioned for storage.

Another feature is the small breastplate which protects the patient's clothing from being caught between the lower end of the moving arc and the machine underneath the chin rest. The height of the machine from the floor is easily varied by a small crank, which works a gear arrangement. It is not necessary to loosen or tighten any screws before or after raising or lowering this.

Two more features have been added to this machine. One is a pair of small handles coming off the breastplate for the patient to hold to, during examination. The other is a small screen to protect the examiner's eyes from the source of illumination in certain positions of the perimeter arc.

The base is heavy, stable, and mounted on small casters, which allows moving the machine about. When not in use, the entire machine can be placed against the wall, and it takes very little space in this position (fig. 4). Where it is not planned to move the perimeter about, the small casters can be removed, thus making a very firm, stable instrument.

A MODIFIED ERISOPHAKE

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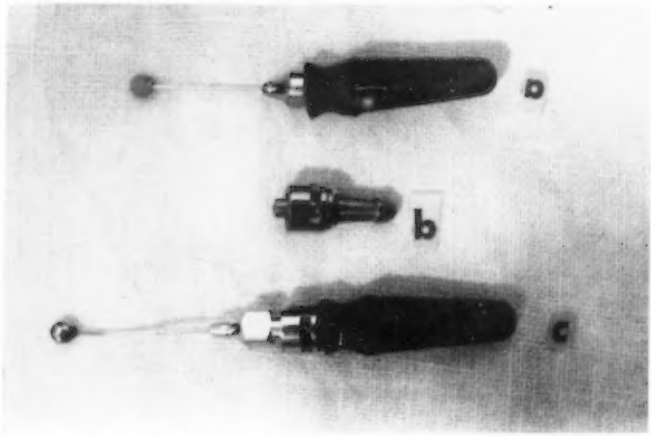

FIG. 1—a, The original Bell erisophake; b, the B.D. luer lok adapter; c, the modified erisophake with rubber bulb, luer lok adapter and suction tip; over-all length, 10 cm.

IN AN endeavor to simplify the extraction of a cataractous lens, the surgeon has progressively improved his technic and with it his instrumentation. In 1902 Stoever recommended the use of a suction cup to aid in the extraction of the lens. The works of Hulen[4] (1911), Barraquer[1] (1917), Dimitry[2] (1939), Nugent and Fisher (1933), Castroviejo, Bell and Harrington[3] have served to increase the popularity of this method of extraction.

I had been using the Bell erisophake and modified it in October of 1950 for several reasons.* Primarily, I felt that the instrument as set up was too light and did not give an adequate feel to the instrumentation and technic, and in the second place, it was too short to manipulate. In view of this, I simply added a Becton-Dicton luer lok adapter to the setup and have added, thus, length and maneuverability to the instrument (fig. 1). The weight now more closely approximates that of eye scissors and forceps, and this added weight is centralized to act as a fulcrum for the manipulation and extraction of the lens, once the suction has been applied. The addition of this leur lok end allows easy removal of the suction needle for cleansing or storage when not in use. It has been found that autoclaving this instrument prevents leaks and makes the rubber bulb adhere more tightly to the metal leur lok end.

I have been using this modified Bell's erisophake since October of 1950, as

*Manufactured by the Storz Instrument Co., St. Louis, Mo.

Presented as a *New Instrument* at the Fifty-Eighth Annual Session of the American Academy of Ophthalmology and Otolaryngology, Oct. 11-16, 1953, Chicago, Ill.

have several of my colleagues, and our results and satisfaction have been uniform.

The technic of instrumentation adopted for use with this modified erisophake is the tumbling technic plus the lateral placement of the instrument. In the maneuver of extraction, after suction has been set, more delicate instrumentation is possible by holding this erisophake at the site of the luer lok adapter between the index finger and thumb and using gentle and slow rotation as in rotating a pencil between the fingers.

In conclusion then, the simplicity of this modification plus the possibility of more delicate instrumentation will appeal to the users of an erisophake and be well worth adopting.

REFERENCES

1. Barraquer: La extraccion ideal de la cataracta, El Siglo Med., 1917.
2. Dimitry, T. J.: Evolution of a sucking disk for intracapsular extraction of cataract, Arch. Ophth., 21:261-265 (Feb.) 1939.
3. Harrington, David O.: Mechanics of intracapsular cataract extraction, Arch. Ophth., 42:23-41 (July) 1949.
4. Hulen, Vard H.: Vacuum fixation of the lens and flap suture in the extraction of a cataract in its capsule, J.A.M.A., 57:188-189 (July 15) 1911.
5. Stoever: Demonstrations eines Instruments zur Extraktion der Lenses in der Kapel, Heidelberger Bericht, 1902.

ENUCLEATION NEUROTOME

RAY TULLY BRADFORD, M.D.
CHICAGO, ILL.
BY INVITATION

ENUCLEATION of the eyeball is commonly attended by hemorrhage following the severance of the optic nerve and posterior vessels. Instruments of the snare type have been used to compress the nerve and vessels slowly and reduce hemorrhage. This is a blind and unguarded procedure and may result in excision of a very short nerve stump, or even the posterior part of the sclera. Another technic consists of applying a small curved clamp on the nerve, and

FIGURE 1.

From the Department of Ophthalmology, Illinois Eye and Ear Infirmary of the University of Illinois College of Medicine.

Presented as a *New Instrument* at the Fifty-Eighth Annual Session of the American Academy of Ophthalmology and Otolaryngology, Oct. 11-16, 1953, Chicago, Ill.

cutting distal to the clamp with scissors. The insertion of two bulky instruments is difficult, and a long nerve stump is difficult to obtain by this method.

The enucleation neurotome (fig. 1) was designed to ensure a guarded cutting of the optic nerve and posterior vessels and to reduce subsequent hemorrhage.* It consists of a double curved hemostatic clamp 14.5 cm. in length with serrated jaws 3 cm. long, curved at an angle of 35 degrees to facilitate use in the orbit. The jaws of the clamp are fitted with a guarded track on their anterior surface through which a flexible steel blade passes with the sharp edge on the end. Only those tissues engaged in the jaws of the clamp are exposed to the cutting edge of the blade.

In usage the optic nerve is localized from either the temporal or nasal side just as with an enucleation scissors, and the instrument is closed and locked. The cutting blade is then pushed through the guarded track, thereby severing in a guillotine fashion the nerve and vessels peripheral to the clamped portion (fig. 2). Removal of the globe from the orbit is accomplished while the proximal portion of the nerve and vessels remain clamped. In most cases, the neurotome can then be removed without bleeding. However, if one desires, the nerve stump can be ligated easily prior to the removal of the neurotome.

*Manufactured by V. Mueller Company, 340 South Honore Street, Chicago 12, Ill.

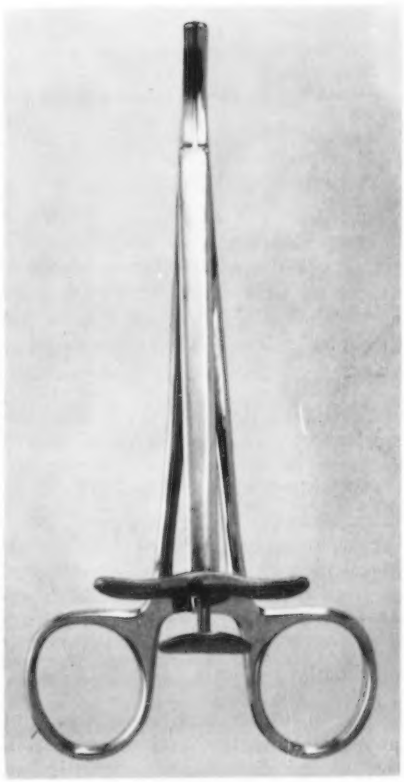

FIGURE 2.

In practice, the advantages of this instrument have been (1) section of the nerve with protection against cutting the sclera or Tenon's capsule; (2) clamping of the proximal portion of the nerve to promote hemostasis, permitting the application of a ligature if desired; and (3) technical ease of operation.

AN ISOTHERMAL CONTROLLED PRESSURE IRRIGATION APPARATUS

VICTOR GOODHILL, M.D.
LOS ANGELES, CALIF.

IN otorhinologic practice it is frequently desirable in office procedures to have available irrigation solutions. Such solutions are used in cerumen removal, warm caloric vestibular stimulations, nasal irrigations,[1] sinus irrigations, throat irrigations and in numerous other ways.

Several years ago it was deemed desirable to have available an apparatus to facilitate such irrigations under manometric control with simultaneous automatic temperature control through a thermostatically controlled electric heating element. Mr. J. J. Cantor designed such an instrument at the author's request. It has now been in constant use for seven years in a large number of otorhinologic offices.

The apparatus permits the exercise of precise temperature and pressure control, a most desirable feature in irrigations past sensitive mucous membranes. The apparatus (figs. 1 and 2) consists of a silver-soldered brass tank having a capacity of one gallon, the whole being mounted on a sturdy castered base. This tank, which contains the solution, is electrically heated and thermostatically controlled. The solution is introduced through a quickly removable plug at the top of the tank, and the top of the tank can be removed for cleaning and inspection.

FIGURE 1.

Three means are used to prevent any possible backflow of solution: (1) a quickly manipulated manually controlled valve; (2) a submerged check-valve having a quartz ball; (3) provision for raising the entire tank above the level of the patient's head.

In practice the apparatus is electrically connected the first thing in the morning and only disconnected when used on the patient. After disconnecting the apparatus electrically the apparatus is rolled up to the patient and the control valve is placed to the "H_2O" position

From the Department of Otolaryngology, University of Southern California School of Medicine.

Presented as a *New Instrument* at the Fifty-Eighth Annual Session of the American Academy of Ophthalmology and Otolaryngology, Oct. 11-16, 1953, Chicago, Ill.

FIGURE 2.

and compressed air is introduced into the top of the tank through the standard cutoff. The compressed air forces the solution out through the rubber tubing to the point of application. The actual pressure being used can be observed on the gauge. A height gauge on the side of the tank indicates the volume of solution in the tank. After use the value is placed to the position of "air" and the surplus solution is forced out of the rubber tubing.

REFERENCE

1. Cantor, J. J.: The removal of secretions from the nasal antrum; the part played by pressure when irrigating the nasal passage with warm saline solution; a physical hypothesis, Laryngoscope, 58:1307-1314 (Dec.) 1948.

In Memoriam

Herman David Andrews.....East Aurora, New York
July 23, 1954

Norman Duncan Buchanan. Peterborough, Ontario, Canada
June 29, 1954

Henry F. Crossen.....Detroit, Michigan
June 20, 1954

James Reginald Dowling.....Massillon, Ohio
June 3, 1954

Henry Russell Johnson.....Fairmont, West Virginia
June 22, 1954

Harry Webster Lyman.....St. Louis, Missouri
May 6, 1954

Bascom Headon Palmer.....Miami, Florida
September 2, 1954

Lee T. Richie.....Trinidad, Colorado

Ignatius George Sommers.....Los Angeles, California
August 18, 1954

TRANSACTIONS
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Highlights of the Fifty-ninth Annual Meeting

When the Council recommended that the Fifty-Ninth Annual Meeting take place in New York in September 1954 there was some apprehension concerning the weather, for late summer can have hot, humid days in New York. That attendance is dependent on weather was also brought to mind and there was some speculation on what to do about the program. The meeting now is a matter of historical record and the record is good. Fortunately the weather was favorable for moderate activity and sleep. In October it was not so good.

The total registration was 5,858, the greatest in the history of the Academy. The total attendance is estimated at well over 6,000 as many visitors came only for a few hours and did not register. The instruction courses, of which there were 160 in ophthalmology and 147 in otolaryngology, were well attended. Many visitors from abroad who came to New York for the meeting of the XVII International Congress of Ophthalmology attended the instruction courses and showed great interest in the postgraduate programs of the Academy.

At a very impressive opening session President Walter Theobald introduced the Guest of Honor, Dr. William James McNally, whose address on "Some Thoughts About Research in the Training of a Doctor" was largely drawn from his own experience. Dr. McNally had had several grants in aid from the Academy which he wisely applied to research in the field of otolaryngology. Dr. Theobald presented Dr. McNally with an engraved plaque expressing the appreciation of the Academy for his contributions to the science of his specialty.

An innovation in scientific programs was staged by the Section on Otolaryngology in "A Mock Compensation Trial" presented by the Committee on Conservation of Hearing. "Stew" Nash played the part of the negligent otolaryngologist who was questioned in court by professional trial lawyers in a suit for compensation for loss of hearing by a worker in an aura of unusual industrial noise. The lesson was driven home to everyone in the audience. An internist, a guest speaker on the program,

named the Trial Court as the outstanding feature of the meeting.

The Alumni Dinners and Evening of Diversion were again outstanding items in the social program. The Grand Ballroom of the Waldorf-Astoria Hotel was filled to capacity for the usual after-dinner refreshments and entertainment. Dr. Theobald literally lost his shirt to Prince Hara, the Pick-Pocket Magician, who demonstrated the art of taking watches and billfolds, but the act may have been rehearsed.

The Round Table Discussion Cruise was carried out on the S. S. Queen of Bermuda under the direction of Dr. French K. Hansel. In the Forum of this luxurious vessel the first session was held on Sunday morning, Dr. Hansel and Dr. W. L. Benedict speaking on allergy in ophthalmology and otolaryngology. The second session was held on the return trip on Thursday. The subjects of "Allergy of the Eye" and "Respiratory Allergy" were discussed by Drs. French K. Hansel, George N. Hosford, S. Albert Hanser and Wilber F. Swett.

The following members and guests comprised the party:

Dr. and Mrs. James H. Adams
Dr. and Mrs. William H. Anderson
Dr. and Mrs. F. R. Attridge
Dr. and Mrs. Arthur T. Bailey
Dr. and Mrs. John Bannon
Dr. and Mrs. William F. Beckner
Dr. and Mrs. William L. Benedict
Dr. and Mrs. D. W. Brickley, Jr.
Dr. and Mrs. H. H. Briggs
Dr. and Mrs. Taylor S. Burgess
Captain M. C. and Mrs. Eugene Callaway, Jr.
Dr. and Mrs Francis H. Cardot
Dr. and Mrs. E. Franklin Carl
Dr. and Mrs. John A. Cetner
Dr. and Mrs. E. L. Chainski
Dr. and Mrs. H. E. Christenberry, Jr.
Dr. and Mrs. James W. Clower
Dr. and Mrs. K. W. Covell
Dr. and Mrs. A. E. Cruthirds
Dr. and Mrs. John C. Cunningham
Dr. and Mrs. Leslie E. Daugherty
Dr. and Mrs. Robert DeCock
Dr. H. Eugene Douds
Dr. and Mrs. E. D. Dumas
Dr. and Mrs. John C. Dumbar
Dr. and Mrs. George Farmlett
Dr. and Mrs. Louis Feid
Dr. and Mrs. Norman W. Flaherty
Miss Figes Flaherty
Miss Janet Flaherty
Dr. and Mrs. Gregory Flynn
Dr. and Mrs. William D. Foote
Dr. and Mrs. Donald D. Frawley
Dr. and Mrs. Gustave B. Fred
Miss Constance R. Fred
Dr. and Mrs. G. R. Geeseman
Dr. and Mrs. A. R. Gillespie
Dr. and Mrs. Devitt L. Gordon
Dr. and Mrs. J. F. Gorrell
Dr. and Mrs. Charles C. Grace
Dr. and Mrs. Harold M. Griffith
Dr. and Mrs. French K. Hansel
Dr. and Mrs. S. Albert Hanser
Dr. and Mrs. R. D. Harley
Dr. and Mrs. David M. Harwood
Dr. and Mrs. Isaac B. High
Dr. and Mrs. Howard T. Holden
Dr. and Mrs. Paul F. Holl
Dr. and Mrs. George N. Hosford
Dr. and Mrs. Raymond A. Johnson
Dr. and Mrs. Morris Kaplan
Dr. and Mrs. Frank R. Keith
Dr. and Mrs. Raymond H. King
Dr. Margaret Noyes Kleinert
Dr. and Mrs. Carl T. Korsmo
Dr. and Mrs. J. M. LaBerge
Dr. and Mrs. Lawrence J. Lawson
Dr. Roger H. Lehman
Dr. and Mrs. Gerson Lowenthal
Dr. and Mrs. Donald J. Lyle
Dr. and Mrs. Gordon G. MacAlaster
Dr. and Mrs. C. S. McConnel
Dr. and Mrs. Frank R. Markey
Dr. and Mrs. Paul T. Martin
Dr. and Mrs. M. S. Miller
Dr. Edward R. Mountain
Dr. and Mrs. F. Nelson
Dr. and Mrs. C. A. Nordstrom
Dr. and Mrs. Francis O'Toole
Dr. and Mrs. John J. Penta
Dr. and Mrs. G. LeRoy Porter
Dr. and Mrs. C. A. Presnell
Dr. and Mrs. C. J. Radl
Dr. and Mrs. Frank J. Raffaele
Dr. and Mrs. Wesley G. Reid

Mr. and Mrs. Carl W. Ricker
Dr. and Mrs. E. A. Rittenhouse
Dr. and Mrs. William P. Robinson
Dr. and Mrs. Charles W. Roller
Dr. and Mrs. David B. Rosehill
Dr. and Mrs. Robert Rupp
Dr. and Mrs. William H. Ryder
Dr. and Mrs. George D. Sale
Dr. and Mrs. Lee G. Sannella
Miss Frances Sannella
Miss Lynne W. Sannella
Dr. Albert V. Saradarian
Dr. and Mrs. H. B. Searcy
Dr. and Mrs. Graham G. Smith
Dr. and Mrs. Benjamin F. Souders
Dr. and Mrs. Robert Sours
Dr. and Mrs. Thomas D. Stapleton
Mr. and Mrs. Edward Stein
Dr. Thomas C. Stevenson
Mr. and Mrs. Russel Stimson
Dr. and Mrs. Wilber F. Swett
Dr. and Mrs. George M. Tangen
Dr. and Mrs. Joseph W. Taylor
Dr. and Mrs. Joseph G. Tirico
Dr. and Mrs. J. H. Underwood
Dr. and Mrs. Thomas Y. Watson
Dr. and Mrs. Carrol L. Weeks
Miss Carrol Diane Weeks
Dr. and Mrs. Philip R. Weist
Dr. and Mrs. W. C. Wells
Dr. and Mrs. Edward C. Wolston
Mr. Edward S. Wolston
Dr. John T. Worcester
Dr. Dorothea G. Worcester
Dr. and Mrs. Edward S. Wright
Dr. and Mrs. Wade Youngblood
Dr. and Mrs. Samuel Zurik

Arrangements for the Cruise were made by Leon V. Arnold, an experienced travel agent from New York. He and his registration staff, Mr. and Mrs. Samuel H. Patton, cared for every detail of travel and personally attended the meetings and supervised the shore excursions. Our host, Captain L. F. Banyard, O.B.E., R.C.N. (R) Ret., greeted the assembly at the opening meeting and arranged a splendid farewell menu souvenir program for our last evening aboard. Our deepest appreciation is extended to Mr. Arnold and his staff and to Captain Banyard and his courteous crew.

SCREENING SCHOOL CHILDREN FOR VISUAL DEFECTS

The report of a study carried out with the joint support of the National Society for the Prevention of Blindness, the Children's Bureau of the United States Department of Health, Education and Welfare, the Division of Health of the Missouri State Department of Public Health and Welfare, the St. Louis Board of Education, the Department of Ophthalmology, Washington University School of Medicine, and the Office of Naval Research has just been published by the U. S. Department of Health, Education and Welfare, Children's Bureau Publication No. 345, and is for sale by the Superintendent of Documents, U. S. Government Printing Office, Washington 25, D. C., price 35¢.

This report is the result of study to determine the efficiency of certain procedures commonly used or recommended for use in schools to screen children for visual defects. The screening procedures studied were: Teacher Judgment, the Snellen Test, a Near Vision Test using the Lebensohn or Guibor charts, the Massachusetts Vision Test, the Keystone View Company Telebinocular Test, combinations of some of these procedures, and, for sixth-grade students, two procedures developed for use in industry rather than in schools: the Bausch and Lomb Ortho-Rater and the American Optical Company Sight-Screener.

The final result of the test stresses the importance of teacher judgment, and the vision test receiving the most favorable comment was the Massachusetts Vision Test.

This report should be placed in the hands of all ophthalmologists, optometrists, school physicians, school superintendents and principals, and all others concerned with the vision tests of children.

Necrology

IN MEMORIAM

Thad Warner Ashley, Kenosha, Wis.
Charles Glenn Baird, Palo Alto, Calif.
Charles Edward Bauer, Poughkeepsie, N. Y.
Alvin Behrens, Brooklyn, N. Y.
Alvin Hermann Benz, Ann Arbor, Mich.
Irl Hazard Blaisdell, Syracuse, N. Y.
Clayton M. Brown, Buffalo, N. Y.
Eugene Loring Bulson, Fort Wayne, Ind.
Edward Henry Cary, Dallas, Texas
Vernon Alaska Chapman, Palm Springs, Calif.
Harold William Cowper, Buffalo, N. Y.
Jacob Daley, New York, N. Y.
John Francis Delph, Michigan City, Ind.
Henry Dintenfass, Philadelphia, Pa.
Frederick Alexander Douglas, LaCrosse, Wis.
James Reginald Dowling, Massillon, Ohio
William Weir Fitzgerald, Yonkers, N. Y.
Paul Norman Friedman, Baltimore, Md.
Frederick Eugene Garland, Boston, Mass.
John B. Gregg, Sioux Falls, S. D.
LeGrand Haven Hardy, New York, N. Y.
William Henry Haskin, Babson Park, Fla.
Charles Rittenhouse Heed, Haverford, Pa.
Arthur J. Herzig, New York, N. Y.
Samuel George Higgins, Milwaukee, Wis.
James Vernon Hodge, Kingsport, Tenn.
Henry Russell Johnson, Fairmont, W. Va.
George Isaac Keskey, Marquette, Mich.
George Lester Kilgore, San Diego, Calif.
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Hector George LaReau, Chicago, Ill.
Arcangelo Liva, Los Angeles, Calif.
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Donald Cecil McFarlane, London, Ont., Canada
Samuel Dace McPherson, Durham, N. C.
Ernest Charles Mead, Gainesville, Texas
Chester Rudolph Mills, Boston, Mass.
Henry Minsky, New York, N. Y.
Wellwood Mack Nesbit, Madison, Wis.
Arthur Palmer, New York, N. Y.
Avery deHart Prangen, Rochester, Minn.
Josiah Edmund Quincy, West Roxbury, Mass.
James Andrew Merle Russell, Erie, Pa.
William Maurice Smit, St. Louis, Mo.
Robert Arvil Smith, New Castle, Ind.
Henry Stanbery, Cincinnati, Ohio
William David Stinson, Memphis, Tenn.
Jerome Frank Strauss, Chicago, Ill.
Paul Jacob Stueber, Lima, Ohio
Fred Sanborn Thorne, Boston, Mass.
Karl Norvin Victor, Louisville, Ky.
Richard Waldapfel, Grand Junction, Colo.
Walter Franz von Zelinski, Santa Barbara, Calif.

THAD WARNER ASHLEY

Dr. Thad Warner Ashley was born on April 6, 1874, and died on May 18, 1954, in Kenosha, Wisconsin. His preliminary education was received in Steuben, Ohio, and he received his degree in medicine from the University of Cincinnati in 1901. In 1923 he did postgraduate work under Dr. Heinrich Neumann in Vienna and in 1928 he studied under Dr. Georges Portmann in Bordeaux.

Dr. Ashley began the practice of medicine in 1901 as a railroad physician with the Baltimore and Ohio Railroad. He later became associated with Dr. Prince in Springfield, Illinois. After moving to Kenosha, Wisconsin, Dr. Ashley served on the staff of the Kenosha Hospital and of St. Catherine's Hospital.

A Life Fellow of the American Academy of Ophthalmology and Otolaryngology, Dr. Ashley was also a member of the Kenosha County Medical Society, the Wisconsin State Medical Society and the American Medical Association. He had an active interest in harness horse racing and golf. At 79 years he played 18 holes of golf two to three times a week. Dr. Ashley was honored by the State Medical Association for fifty years of practice in 1951, and he celebrated his fiftieth wedding anniversary in 1952.

Surviving Dr. Ashley are his wife, Mrs. Jessie W. Ashley, two daughters, Elaine Ashley Hoffhines and Carlyn Ashley Vogt, a son, Richard W. Ashley, M.D., and one sister, Mrs. Jessie Schorndorfer.

CHARLES GLENN BAIRD

Dr. Charles Glenn Baird of Palo Alto, California, was born in 1887. He received his degree in medicine from the St. Louis University School of Medicine in 1912.

A specialist certified by the American Board of Otolaryngology, Dr. Baird had been recently practicing his specialty in Palo Alto. He served in the Armed Forces during World Wars I and II and was affiliated with the Veterans Administration in San Francisco.

Dr. Baird was a Life Fellow of the American Academy of Ophthalmology and Otolaryngology and had been an associate member of the San Francisco Medical Society since 1950.

Dr. Baird, who is survived by his wife, died on December 3, 1953.

CHARLES EDWARD BAUER

Dr. Charles Edward Bauer of Poughkeepsie, New York, a Fellow of the American Academy of Ophthalmology and Otolaryngology, was born in 1902 and died December 9, 1953, at the age of 51. He received his medical degree from Cornell University Medical College, New York, in 1928 and was a specialist certified by the American Board of Ophthalmology.

Dr. Bauer was on the consulting staff of the Northern Duchess Health Service Center in Rhinebeck and the New York Eye and Ear Infirmary and on the attending staff of Vassar Brothers Hospital. He served in the Armed Forces during World War II.

ALVIN BEHRENS

Dr. Alvin Behrens of Brooklyn, New York, was born on May 28, 1905. He received his medical degree from Columbia University in 1929 and was a specialist certified by the American Board of Ophthalmology in 1932. He was assistant surgeon at Brooklyn Eye and Ear Hospital, Chief in Ophthalmology at Ocean Hill Dispensary, and assistant ophthalmologist at both Seaview Hospital, Staten Island, and at Jewish Hospital Dispensary.

A Fellow of the American Academy of Ophthalmology and Otolaryngology, Dr. Behrens was also a member of the Brooklyn Ophthalmological Society, Kings County Medical Society, and the American Medical Association.

Dr. Behrens died on August 3, 1953.

ALVIN HERMANN BENZ

Dr. Alvin Hermann Benz, who was born in Dexter, Michigan, May 17, 1907, died in Ann Arbor, Michigan, August 20, 1953. He received his preliminary education in Ann Arbor, and the degree of Bachelor of Arts from the University of Michigan in 1928. In 1931 he received his medical degree from the University of Michigan.

Dr. Benz began the practice of medicine in 1935 at Chattanooga, Tennessee.

A specialist certified by the American Board of Ophthalmology, Dr. Benz was a Fellow of the American Academy of Ophthalmology and Otolaryngology. He

was a member of the American Medical Association, Tennessee Academy of Ophthalmology and Otolaryngology, and Pan-American Association of Ophthalmology.

During World War II he served as Major in the Medical Corps.

IRL HAZARD BLAISDELL

Dr. Irl Hazard Blaisdell, a Fellow of the American Academy of Ophthalmology and Otolaryngology, was born on March 10, 1911, at Providence, Rhode Island. He received his medical degree from Tufts College, Boston University School of Medicine in 1935. He had hospital and teaching appointments at Syracuse Memorial Hospital, Syracuse University Hospital, Syracuse City Hospital, and the New York State Psychopathic Hospital at Syracuse. At the time of his death he was Clinical Associate Professor of Otolaryngology at the State University of New York College of Medicine at Syracuse, New York.

Dr. Blaisdell was a member of the American Medical Association, American Rhinological, Laryngological and Otological Society, New York State Society of Medicine and American Broncho-Esophagological Association. He was interested in fraternal work and in Masonic orders. Fishing and wood-working were among his hobbies.

Both Dr. and Mrs. Blaisdell were killed almost instantly in an automobile accident on August 1, 1953. Surviving are their three sons, David, Donald and Richard.

CLAYTON MILO BROWN

Dr. Clayton Milo Brown of Buffalo, New York, was born in Hermitage, New York, on July 28, 1871. He received his medical degree from the University of Buffalo School of Medicine in 1896 and did his postgraduate work in Vienna, Austria, from 1907 to 1908, and again for three months in 1913. He was a specialist certified by the American Board of Otolaryngology. Dr. Brown was professor of rhinolaryngology emeritus at his alma mater.

Dr. Brown began the practice of medicine in Buffalo in 1896. He was on the staffs of General, Children's, Deaconess, Millard Fillmore, Sisters and Warsaw Community hospitals.

A Life Fellow of the American Academy of Ophthalmology and Otolaryngology, Dr. Brown was also a fellow of the American College of Surgeons and a member of the American Laryngological, Rhinological and Otological Society, the Buffalo Otolaryngological Society and the Erie County Medical Society. The taking of motion pictures and slides of his travels were among his outside interests.

Dr. Brown died on March 19, 1954. Surviving are his wife, Evelyn M. Brown, and two daughters, Margaret Emma and Evelyn Frances.

EUGENE LORING BULSON

Dr. Eugene Loring Bulson was born in Fort Wayne, Indiana, on February 26, 1894, and died in the city of his birth on April 13, 1954. He obtained his preliminary education at Fort Wayne Public School and Phillips Academy, Andover, Massachusetts, and took a premedical course at the University of Michigan, receiving his degree in medicine from Indiana University School of Medicine, Indianapolis, in 1920. He did his postgraduate work at the New York Post-Graduate Medical School and began the practice of medicine in Fort Wayne, Indiana, in 1924.

A specialist certified by the American Board of Ophthalmology and the American Board of Otolaryngology, Dr. Bulson was an instructor in the nurses' training schools of the St. Joseph's and Methodist hospitals, and was also president of the staff at St. Joseph's Hospital. He was editor of the publication, "The Caduceus," for many years. Dr. Bulson served in the Armed Forces during World War I. He was a Fellow of the American Academy of Ophthalmology and Otolaryngology and the American College of Surgeons; a member of the American Medical Association, Indiana State Medical Association, Fort Wayne Medical Society, Indiana Academy of Ophthalmology and Otolaryngology, Chicago Ophthalmological Society, Tri-State Medical Society, and past president of the Fort Wayne Academy of Physicians and Surgeons.

Dr. Bulson was president of the Magicians Club for 25 years, a member of the Quest Club, Chamber of Commerce, Fort Wayne Country Club, Chicago Athletic Club and Wawasee Yacht Club.

Surviving are his widow, Mrs. Phyllis Bulson, and a daughter, Mrs. Lawrence Eberback, Jr.

EDWARD HENRY CARY

Dr. Edward Henry Cary was born on February 28, 1872, in Union Springs, Alabama, and died on December 11, 1953, in Dallas, Texas. In 1898 he received his degree in medicine from the Bellevue Hospital Medical School, New York. In 1916, Baylor University conferred upon Dr. Cary the degree of Doctor of Laws.

Dr. Cary was a Life Fellow of the American Academy of Ophthalmology and Otolaryngology, being a specialist certified by both the American Board of Ophthalmology and the American Board of Otolaryngology.

Dr. Cary interned at Bellevue Hospital from 1898 to 1899 and at New York Eye and Ear Infirmary from 1899 to 1901. He was Professor and Head of the Department of Ophthalmology and Otolaryngology at Baylor University from 1902 to 1943, Dean of Baylor Medical School from 1902 to 1922 and Dean Emeritus from 1929 to 1943, when it moved to Houston. He was chairman of the Department of Surgery from 1921 to 1929, chairman of the faculty from 1909 to 1929, chairman of the staff and chairman of the Advisory Board at Baylor School and Hospital from 1909 to 1929. He was one of the organizers of Southwestern Medical Foundation in 1939. This Foundation created the Southwestern Medical School in 1943 when the Baylor Medical School moved to Houston. He served as its President and Chairman of its Board of Trustees until his death. He was also Professor Emeritus of Ophthalmology at Southwestern Medical School of the University of Texas.

Dr. Cary was a Fellow of the American College of Surgeons and a member of the American Medical Association, serving as a trustee from 1925 to 1929 and as president from 1932 to 1933. He was a member of the American Laryngological, Rhinological and Otological Society; of the Southern Medical Association, serving as president from 1919 to 1920; of the Texas State Medical Association, of which he was a past president; of the Dallas County Medical Society, of which he was a past president; and of the Texas Society of Ophthalmology and Otolaryngology, of which he was also a past president. He was president and chairman of the Executive Board of the National Physicians' Committee. Dr. Cary was a member of the fraternities of Phi Alpha Sigma and Alpha Omega Alpha.

While serving as president-elect and president of the American Medical Association, Dr. Cary traveled far and wide in behalf of medicine's fight against socialized medicine. As chairman of the executive board of the old National Physicians' Committee, he was one of the pioneers in that battle.

Dr. Cary had an active interest in the Blue Cross and Blue Shield Plans in Texas. He was past president of the Philosophical Society of Texas, member of the Dallas Country Club, the Dallas Athletic Club, the Brook Hollow Golf & Country Club, the Critic Club, the Society of Colonial Wars, and the Dallas Citizens Council. At the time of his death, he was president of the Dallas Historical Society. In 1945 he was recipient of the Linz Award.

Surviving are his wife, Georgie, a son, Edward H. Cary, Jr., and three daughters, Mrs. Ogden Brower, North Tarrytown, N. Y., Mrs. W. L. Carwile, Jr., Tulsa, Oklahoma, and Mrs. John I. Hill, Houston, Texas.

VERNON ALASKA CHAPMAN

Dr. Vernon Chapman, a Life Fellow of the American Academy of Ophthalmology and Otolaryngology, was born at Morenci, Michigan, on November 25, 1873. He was a graduate in medicine of the Baltimore Medical College in 1898 and did postgraduate work at the Chicago Eye, Ear, Nose & Throat College in 1903; at the Illinois Charitable Eye & Ear Infirmary from October 1903 to June 1904, where he served as resident surgeon; at the Illinois School of Electro Therapeutics of Chicago in 1908, and at Harvard Medical School in 1916. In 1900 he began the practice of medicine in Montague, Michigan.

Before moving to Palm Springs, California, several years ago, Dr. Chapman was on the staff of Columbia Hosiptal, Milwaukee, Wisconsin, Milwaukee General Hospital, Hackley Hospital, Muskegon, Michigan, San Gorgonio Pass Memorial Hospital, Banning, California, and Marquette University, where he was assistant professor of ophthalmology.

A fellow of the American College of Surgeons, Dr. Chapman was on the Wisconsin Governing Board of Gorgas Memorial Institute. Dr. Chapman was ship surgeon on the Holland American Line and

acting assistant surgeon for the United States Public Health Service during the influenza epidemic of 1918.

Dr. Chapman died at Memorial Hospital, Manitowoc, Wisconsin, on January 15, 1954. He is survived by two daughters, Mrs. J. T. Kaminski and Mrs. Muriel C. O'Neil, a son, Major D. S. Chapman, U. S. Army, and seven grandchildren.

HAROLD WILLIAM COWPER

Dr. Harold William Cowper was born in Toronto, Canada, in 1877, and died February 6, 1954, in Buffalo, New York. He received his medical degree from the University of Buffalo Medical School in 1897 and began the practice of medicine in the U. S. Army in the same year.

Dr. Cowper was chief ophthalmologist at the Buffalo General Hospital from 1932 to 1942, former associate professor of ophthalmology at University of Buffalo Medical School in 1924, and served on the staffs of Millard Fillmore, Mercy, Emergency, Buffalo Eye & Ear, and E. J. Meyer Memorial hospitals.

A Life Fellow of the American Academy of Ophthalmology and Otolaryngology, Dr. Cowper was a fellow of the American College of Surgeons, a member of the American Medical Association, New York State Medical Society, Buffalo Academy of Medicine, Erie County Medical Society, and Buffalo Ophthalmological Club, of which he was a founder and a former president.

Survivors are two sons, Dr. A. R. Cowper and Harold William Cowper, Jr., a sister, Mrs. H. Allen, and a brother, Mr. Ewart Cowper.

JACOB DALEY

Dr. Jacob Daley, a Fellow of the American Academy of Ophthalmology and Otolaryngology, was born in 1897 in Russia, and died on February 17, 1954, in New York City.

Dr. Daley received his degree in medicine from the Fordham University School of Medicine, New York, in 1920, and did his postgraduate work at the Post Graduate Hospital in New York City. He was a specialist certified by the American Board of Otolaryngology, and he began the practice of medicine in 1921 in New York City. He had hospital appointments at East Side, St. Mark's, Murray Hill, Post Graduate and French hospitals. He was chief of otolaryngology at French Hospital.

Dr. Daley was one of the founders, past president, formerly secretary and vice-president of the American Otorhinologic Society for the Advancement of Plastic Surgery, Inc. He was also a member of the New York State Medical Society and the New York County Medical Society. He had a great interest in magic, and was a member of the Magicians Guild of America, the Society of American Magicians, and the International Brotherhood of Magicians.

Surviving Dr. Daley are a brother and two sisters.

JOHN FRANCIS DELPH

Dr. John Delph, who was born on April 3, 1892, in Fairmount, Indiana, died at Passavant Memorial Hospital, Chicago, on November 7, 1953.

His preliminary education was received at Notre Dame University and in 1922 he received his degree in medicine from Northwestern University Medical School, Chicago. He did his postgraduate work at the University of Iowa and under Chevalier Jackson in Philadelphia. He began the practice of medicine in Chicago, in 1925.

Dr. Delph was associate professor of otolaryngology at his alma mater and chief of the ear, nose and throat service at Passavant Memorial Hospital.

A Fellow of the American Academy of Ophthalmology and Otolaryngology, he was a member of the American Medical Association, American Broncho-Esophagological Association, Chicago Otolaryngologic Society, and Chicago Institute of Medicine.

Surviving is his wife, Dagney Helen Delph.

JAMES REGINALD DOWLING

Dr. James Reginald Dowling was born in Hamilton, Ontario, Canada, on March 24, 1906, and died in Massillon, Ohio, on June 3, 1954. His preliminary education was received in Hamilton, and he received his degree in medicine from Queens University Faculty of Medicine, Kingston, Ontario, in 1929. He did his postgraduate work at the Manhattan Eye, Ear and Throat Hospital in New York.

He began the practice of medicine in Massillon, Ohio, in October 1933. The past three years he enjoyed his own office building in Massillon.

Dr. Dowling was a Fellow of the American Academy of Ophthalmology and Otolaryngology and the American College of Surgeons and a member of the Cleveland Otolaryngological Club. He was also a diplomate of the American Board of Otolaryngology.

Dr. Dowling participated in the activities of the American Legion, the Elks and the Massillon Club and was also a member of the Fourth Degree of the Knights of Columbus. He served as Major in the Medical Corps at McCloskey General Hospital, Temple, Texas, from 1942 to 1945.

Surviving are his wife, Cecilia Mary Dowling, three daughters, Judith Ann, Joan, and Elizabeth, a son, James Burke, his mother, Mrs. E. Dowling, three brothers and a sister.

FREDERICK ALEXANDER DOUGLAS

Dr. Frederick Alexander Douglas was born in Lindsay, Ontario, Canada, on January 9, 1875, and died in La Crosse, Wisconsin, on February 18, 1954. He received his degree in medicine from the University of Toronto Faculty of Medicine in 1906, and did his postgraduate work in Vienna, London, New York and Chicago. He began the practice of medicine in North Dakota in 1906, but moved to La Crosse many years ago.

He was a member of the staffs of St. Francis, Grandview, and La Crosse hospitals. A Life Fellow of the American Academy of Ophthalmology and Otolaryngology, Dr. Douglas was a fellow of the American College of Surgeons and also of the Physicians and Surgeons Society of Ontario, Canada. A member of the American Medical Association, he was also a member of county and state societies.

For twelve years he was chairman of first aid in the American Red Cross, a charter member of Kiwanis, a Boy Scout leader, and a Chapter and Blue Lodge Mason. Dr. Douglas was cited by the President for distinguished service in selective service during World War II.

Surviving are his wife, Mrs. Lulu M. Douglas, and three sisters, Mrs. Fred Nourer, Mrs. Ben Nelson, and Mrs. Leroy Cooley.

HENRY DINTENFASS

Dr. Henry Dintenfass was born in Tarnow, Austria, on April 2, 1885, and died in Philadelphia, Pennsylvania, on August 25, 1953. He received his degree in medicine from the University of Pennsylvania Department of Medicine, Philadelphia, in 1905, and in 1907 and 1908 he did postgraduate work at the University of Vienna. He began the practice of medicine in Philadelphia in 1909.

A specialist certified by the American Board of Otolaryngology, Dr. Dintenfass was associate professor of otology at the Medico-Chirurgical College, Graduate School of Medicine, University of Pennsylvania; a Life Fellow of the American Academy of Ophthalmology and Otolaryngology; a fellow of the American College of Surgeons; and a member of the American Medical Association, American Laryngological, Rhinological and Otological Society, Inc., College of Physicians of Philadelphia, Philadelphia Laryngological Society, Philadelphia County Medical Society, Pathological Society, Medical Club of Philadelphia, and the Pennsylvania State Medical Society. He was also a member of Phi Delta Epsilon Fraternity, the Country Club, and found relaxation in swimming, golf, and mountain climbing.

Dr. Dintenfass was intensely interested in audio-visual instruction, and his motion picture demonstrations of various otolaryngologic procedures have been donated to the Graduate School of Medicine of the University of Pennsylvania as a memorial to him.

Surviving are his wife and one daughter.

WILLIAM WEIR FITZGERALD

Dr. William Weir Fitzgerald of Yonkers, New York, was born on January 22, 1905. He received his degree in medicine from McGill University Faculty of Medicine in Montreal in 1931, and was a specialist certified by the American Board of Ophthalmology.

A Fellow of the American Academy of Ophthalmology and Otolaryngolgy, Dr. Fiztgerald was affiliated with Grassland Hospital in Valhalla, Yonkers, New York, General and Saranac Lake hospitals, New York, and consulting ophthalmologist at the Veterans Administration Hospital in Surmount.

Dr. Fitzgerald died April 20, 1954.

PAUL NORMAN FRIEDMAN

Dr. Paul Norman Friedman was born in Baltimore, Maryland, on October 24, 1919, and died in the city of his birth in July of 1953. He obtained his preliminary education at City College and received his degree in medicine from the University of Maryland School of Medicine in 1943.

Dr. Friedman began the practice of medicine in Baltimore in September 1947. He was affiliated with Baltimore Eye, Ear & Throat, Charity, University of Maryland, Lutheran and Sinai hospitals.

A Fellow of the American Academy of Ophthalmology and Otolaryngology, Dr. Friedman was also a member of the Baltimore City Medical Society, Ophthalmological Section. He was interested in amateur theatricals as a hobby.

Dr. Friedman is survived by his mother, three sisters and a brother.

JOHN B. GREGG

Dr. John B. Gregg was born in Gladbrook, Iowa, in 1888. He received his medical degree from the State University of Iowa College of Medicine, Iowa City, in 1915. Dr. Gregg interned at University Hospitals, Iowa City, from 1915 to 1916 and was also Senior Clinical Assistant in Ophthalmology and Otolaryngology from 1916 to 1917 and Associate Otolaryngologist from 1919 to 1920 at University Hospitals. Dr. Gregg began the practice of medicine in 1921 at Sioux Falls, South Dakota, where he continued to practice until his death on March 3, 1954.

Dr. Gregg was on the staff at McKennen Hospital and Sioux Valley Hospital in Sioux Falls and was consultant in Otolaryngology at U. S. Veterans Hospital in Sioux Falls. He was also Clinical Assistant Professor in Otolaryngology at the South Dakota Medical School.

A Fellow of the American Academy of Ophthalmology and Otolaryngology, Dr. Gregg was a fellow of the American College of Surgeons, a member of the Seventh District of the South Dakota Medical Society, South Dakota State Medical Society, American Medical Association, and the American Laryngological, Rhinological and Otological Society. He was certified by the American Board of Otolaryngology in 1925.

Dr. Gregg was awarded the British Military Cross while assigned to the Royal Medical Corps in 1918. He was a member and president of the Sioux Falls, South Dakota, School Board for many years; affiliated with Veterans Administration Center; and a member of Sioux Falls Rotary Club.

Surviving are his widow, Mrs. Elida B. Gregg, two sons, John Bailey and Charles D., both of Sioux Falls, and three daughters, Mary Gregg Cornish, Edgewood, Maryland, Elizabeth Ann Gregg, Washington, D. C., and Margaret Gregg Coontz, New York.

FREDERICK EUGENE GARLAND

Dr. Frederick Eugene Garland was born in Gardner, Massachusetts, on February 20, 1875, and died in Boston, Massachusetts, on August 3, 1953. His preliminary education was obtained at Gardner, and he received his Bachelor of Arts degree from Harvard College in 1898 and his degree in medicine from the Harvard Medical School in 1902. He was House Officer at Massachusetts General Hospital from 1902 to 1903. In 1904 Dr. Garland began the practice of otolaryngology in Boston.

An instructor of laryngology at Harvard Medical School, Dr. Garland served as surgeon at Henry Heywood Memorial Hospital, Gardner, and Massachusetts Eye & Ear Infirmary, Boston. He was also assistant surgeon of Children's Hospital in Boston.

Dr. Garland was a collector of antiques and an ardent fisherman. A Fellow of the American Academy of Ophthalmology and Otolaryngology, Dr. Garland was also a member of the American Medical Association and the New England Oto-Laryngological Society.

Survivors are his wife, Mrs. Mary J. Garland, a daughter, Eunice Hill, and a son, Guy Garland.

LE GRAND HAVEN HARDY

Dr. LeGrand Haven Hardy was born on June 13, 1894, in Provo, Utah. He received his degree in medicine from Columbia University College of Physicians and Surgeons, New York, in 1921, and was a specialist certified by the American Board of Ophthalmology. He was Director of the Functional Testing and Physiologic Optics Laboratories, Institute of Ophthalmology, Presbyterian Hospital,

New York, where he was attending ophthalmologist. He also served as attending ophthalmologist at Vanderbilt Clinic; ophthalmologist at Northern Dispensary from 1924 to 1929, when he became consultant; assistant surgeon, New York Eye and Ear Infirmary, from 1924 to 1930; ophthalmic surgeon at Midtown Hospital from 1925 to 1929; and director of ophthalmology at Fifth Avenue Hospital from 1929 to 1936, during which time he opened the first clinic in the United States for the correction of cross-eyes without surgery. The treatment involved corrective exercises and the use of stereoscope-like instruments, many of which Dr. Hardy developed.

During World War II, Dr. Hardy served with the Office of Scientific Research and Development of the Armed Forces.

His most recent publications included a final report on his work for the Office of Naval Research, entitled "The Geometry of Binocular Space Perception," and a new test for detecting defective color vision.

Dr. Hardy had been president of the American Orthoptic Council since 1938. A Fellow of the American Academy of Ophthalmology and Otolaryngology, Dr. Hardy was a fellow of the American College of Surgeons, a member of the American Medical Association, the New York Academy of Medicine, the American Ophthalmological Society, and the Association for Research in Ophthalmology.

Dr. Hardy died on April 14, 1954, in the Harkness Pavilion, Presbyterian-Columbia Medical Center. Surviving is his widow, the former Miss Susanna Edwards Schuyler Haigh.

WILLIAM HENRY HASKIN

Dr. William Henry Haskin was born March 30, 1869, in Ft. Schuyler, New York. His early schooling was at Ft. Schuyler and San Francisco, where he graduated from Boys' High School in 1886. He graduated from the University of California Medical Department in 1889. He interned in the C. & C. Hospital in San Francisco and Woman's Hospital of the State of New York. He became assistant surgeon in the Manhattan Eye, Ear and Throat Hospital in 1895, surgeon in 1924, and surgeon director in 1932. He was Professor of Oral Surgery, at the College of Dental and Oral Surgery, New York City, from 1899 to 1905. Dr. Haskin began military service as Acting Assistant Surgeon, U. S. A., June 1898, serving until July 1919. He was First Lieutenant, M. R. C., U. S. A., 1909 to 1917; Captain, M.C., U. S. A., June 1917; promoted to Major, July 16, 1917, and to Lieutenant Colonel, February 26, 1918. Discharged at his own request July 1, 1919, he was reappointed Lieutenant Colonel, M.R.C., U. S. A., September 21, 1921, and retired in 1931.

Dr. Haskin was a member of a number of medical societies including the American Medical Association, 1899; New York Academy of Medicine, 1902, of which he served as Secretary from 1905 to 1907, and as Chairman from 1907 to 1908; New York Otological Society, 1904, of which he was Secretary from 1911 to 1917; American Otological Society, 1906; American Academy of Ophthalmology and Otolaryngology, 1913; American College of Surgeons, 1912; Honorary Member of Psi Omega Dental Fraternity, and Association of Military Surgeons. He was a member of several clubs including Army & Navy Club, Washington D. C., 1911.

Dr. Haskin published seventeen papers on ear, nose, throat, and dental subjects from 1907 to 1927.

He died March 11, 1954, at Lake Wales, Florida. He is survived by his brother, Mr. J. R. Haskin.

CHARLES RITTENHOUSE HEED

Dr. Charles Rittenhouse Heed of Haverford, Pennsylvania, died on May 23, 1954, at the age of 74. He had received his degree in medicine from the Jefferson Medical College of Philadelphia in 1903, and served as Clinical Professor of Ophthalmology at Jefferson Medical College.

A Life Fellow of the American Academy of Ophthalmology and Otolaryngology, he was also a member of the American Ophthalmological Society.

ARTHUR J. HERZIG

Dr. Arthur J. Herzig was born in 1882, and died in New York City on May 6, 1954, at the age of seventy-two. Dr. Herzig received his medical degree from Columbia University College of Physicians and Surgeons in 1902. He did postgraduate work at St. Luke's and Sydenham

hospitals, New York, and was attending otolaryngologist at the Flower and Fifth Avenue Hospitals, of which he was also Associate Professor of Otolaryngology. A specialist certified by the American Board of Otolaryngology, he was also attached to the Veterans Administration Hospital in Lyon, New Jersey.

A Fellow of the American Academy of Ophthalmology and Otolaryngology, he was a member of the New York County Medical Society, the Medical Society of the State of New York, the American Medical Association, and the New York Academy of Medicine.

SAMUEL GEORGE HIGGINS

Dr. Samuel George Higgins was born on May 14, 1880, in Wausau, Wisconsin, and died on February 9, 1954, in Milwaukee, Wisconsin. He obtained his preliminary education at the University of Wisconsin in Madison, and received his degree in medicine from the College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois in 1905. A specialist certified by the American Board of Ophthalmology and the American Board of Otolaryngology, he was Associate Clinical Professor Emeritus of Otolaryngology at Marquette University School of Medicine, and was also associated with Evangelical Deaconess Hospital, Milwaukee.

Dr. Higgins did postgraduate work in Philadelphia, New York, London, and Vienna. He began the practice of medicine in Chicago in 1906.

A Fellow of the American Academy of Ophthalmology and Otolaryngology, Dr. Higgins was a member of the Milwaukee Oto-Ophthalmic Society, Chicago Ophthalmic Society, Milwaukee Academy of Medicine, International College of Surgeons, Minnesota Academy of Ophthalmology and Otolaryngology, Medical Society of Milwaukee County, State Medical Society of Wisconsin and the American Medical Association.

"Dr. Higgins traveled widely. In 1937 and 1938 he spent six months in India and Africa, where he became known as 'the cataract man.' Dr. Higgins did more than 2,000 cataract operations in Africa and the Far East. He was with a medical missionary team."

Surviving are his wife, Genevieve Coddington Higgins, and a sister, Mrs. Mary Hilgermann, Minneapolis, Minnesota.

JAMES VERNON HODGE

Dr. James Vernon Hodge was born on October 31, 1889, and died in Kingsport, Tennessee, on November 30, 1953. Dr. Hodge was a graduate of the Lincoln Memorial University Medical Department, Knoxville, in 1914. He was a specialist certified by the American Board of Otolaryngology.

A Fellow of the American Academy of Ophthalmology and Otolaryngology, Dr. Hodge was a vice-president of the Tennessee Academy of Ophthalmology and Otolaryngology and a member of the American Medical Association. He was also past president of the Sullivan-Johnson Counties Medical Society and for many years a member of the board of education. He was affiliated with Holston Valley Community Hospital.

HENRY RUSSELL JOHNSON

Dr. Henry Russell Johnson of Fairmont, West Virginia, was born in McKells Mills, West Virginia, on May 28, 1866. He received his degree in medicine from the University of Maryland School of Medicine, Baltimore, in 1892.

A Life Fellow of the American Academy of Ophthalmology and Otolaryngology, Dr. Johnson was an associate fellow of the American Medical Association and a fellow of the American College of Surgeons. He was the first president of the Marion County Medical Society, of which he also served as secretary, and in 1920 he was president of the West Virginia State Medical Association. He was on the staff of the Fairmont General Hospital.

Dr. Johnson died June 22, 1954.

DANIEL BARTHOLOMEW KIRBY

Dr. Daniel Bartholomew Kirby was born in Cleveland on April 12, 1891, and died at Pelham Manor, New York, on December 27, 1953. He received his degree in medicine from the Western Reserve University School of Medicine, Cleveland, in 1916. He was a specialist certified by the American Board of Ophthalmology, of which he was formerly chairman, and the American Board of Plastic Surgery.

Dr. Kirby was professor emeritus of ophthalmology at New York University College of Medicine, and served on the

staffs of the New Rochelle Hospital, New York, St. Joseph's Hospital, Yonkers, Manhattan Eye and Ear Hospital, New York Eye and Ear Infirmary, and St. Clare's Hospital. He was formerly surgeon in chief of the department of ophthalmology at Bellevue Hospital.

One of Dr. Kirby's greatest contributions to Ophthalmology was his book, "Surgery of Cataract."

A Senior Fellow of the American Academy of Ophthalmology and Otolaryngology, he was a fellow of the American College of Surgeons, and a member of the Harvey Society, the American Ophthalmological Society, the Association for Research in Ophthalmology, and the ophthalmologic societies of Brazil, Argentina, Chile, Peru, Cuba, France, and Greece.

GEORGE ISAAC KESKEY

Dr. George Isaac Keskey was born in Wakefield, Michigan, on August 22, 1896, and died in the city of his birth on August 14, 1953. He received his degree in medicine from the University of Michigan Medical School, Ann Arbor, in 1922. A specialist certified by the American Board of Otolaryngology, he did his postgraduate work at New Orleans Eye, Ear, Nose and Throat Hospital. He was on the staff of St. Mary's and St. Luke's hospitals and began the practice of medicine in Kenosha, Wisconsin, in July, 1923.

A Fellow of the American Academy of Ophthalmology and Otolaryngology, Dr. Keskey was also a fellow of the American College of Surgeons.

Surviving are his wife and two sons, Dr. George R. Keskey, Brentwood, Missouri, and Dr. Charles W. Keskey, Oakland, California.

OSSIAN HOMER KING

Dr. Ossian Homer King was born in Robeline, Louisiana, in 1886, and died in Little Rock, Arkansas, on June 15, 1954. He received his degree in medicine from the College of Physicians & Surgeons, Little Rock, in 1911, and did his postgraduate work at Knapps Sanitarium, Vincennes, Indiana. A specialist certified by the American Board of Ophthalmology, he was affiliated with St. Joseph's Infirmary, Hot Springs, Arkansas.

A Life Fellow of the American Academy of Ophthalmology and Otolaryngology, Dr. King was also a member of the Garland County Medical Society, the Arkansas State Medical Society, Eye, Ear, Nose and Throat Section, and the American Medical Association.

GEORGE LESTER KILGORE

Dr. George Lester Kilgore was born in Georgia on July 24, 1902 and died in San Diego, California, on January 13, 1954. He obtained his Bachelor of Science degree at Emory University and his degree in medicine from Emory University School of Medicine in 1926. Following a three-year fellowship at the Mayo Clinic, Rochester, Minnesota, he began the practice of medicine in San Diego, California in 1931.

A specialist certified by the American Board of Ophthalmology, Dr. Kilgore was on the staffs of Mercy and San Diego County General hospitals. He was a Fellow of the American Academy of Ophthalmology and Otolaryngology, and a member of the American Medical Association, the California Medical Association, the American Ophthalmological Society, and the Pacific Coast Oto-Ophthalmological Society.

Dr. Kilgore served in the Army in the New Guinea area from 1942 to 1945. He was a member of the San Diego Rotary Club, San Diego Executive Club, and American Legion Post 492.

Surviving are his wife, Mrs. Gunvor Amundsen Kilgore, and two daughters, Martha and Karen.

GEORGE HENRY KRESS

Dr. George Henry Kress was born in Cincinnati, Ohio, on December 23, 1874, and died January 18, 1954, in California. He received his degree in medicine from the Medical College of Ohio, Cincinnati, in 1899. He did his postgraduate work in University of Berlin and University of Vienna in 1912 and 1920.

A specialist certified by the American Board of Otolaryngology, Dr. Kress was Professor Emeritus of Ophthalmology at the College of Medical Evangelists; secretary of the faculty, College of Medicine, University of Southern California, 1906-1909; professor of hygiene and secretary of the faculty, Los Angeles Medical Department, University of California from 1909 to 1914, when he became Dean,

serving until 1938. He served as chairman of the Los Angeles County Health Department and as a member of the state board of health, and was formerly chairman of the Eye and Ear Committee of the Los Angeles City Schools. For many years he was on the staff of the Los Angeles County Hospital. Dr. Kress served as editor of **California and Western Medicine** from 1927 to 1946; and was formerly editor of the **Journal of Phi Rho Sigma.**

A Life Fellow of the American Academy of Ophthalmology and Otolaryngology, Dr. Kress was an Associate Fellow of the American Medical Association, of which he was fourth vice-president, 1919-1920, and member of its House of Delegates, 1912-1913, 1918, and 1942; secretary of the Medical Society of the State of California; past secretary and president of the California Medical Association and the Los Angeles County Medical Association; past president of the State Commission to Investigate Tuberculosis in California, Los Angeles Academy of Ophthalmology and Otolaryngology, and the Los Angeles Tuberculosis Society; and a fellow of the American College of Surgeons.

ARCANGELO LIVA

Dr. Arcangelo Liva of Los Angeles, California, was born on April 21, 1887. He received his degree in medicine from Eclectic Medical College of the City of New York in 1912, and received a degree from the University of Rome (Italy), Faculty of Medicine and Surgery in 1935. He did his postgraduate work at New York Ophthalmological College Oculo et Auris Chirur., in 1923; the New York Post Graduate School & Hospital; the Pennsylvania University Graduate School; Mt. Sinai Hospital (Columbia University), New York; Washington University; Barnhill Course, Medical Center, Indiana University. He was Professor of Ophthalmology at the Graduate College of the New York Ophthalmic Hospital; instructor in broncho-esophagology at the New York Medical College; Director of the Departments of Ophthalmology and Otolaryngology at Hackensack Hospital; Senior Ophthalmic Surgeon at the New York Ophthalmic Hospital; and attending Bronchoscopist at the Eye & Ear Infirmary at Newark, New Jersey.

A Fellow of the American Academy of Ophthalmology and Otolaryngology, he was also a fellow of the American College of Surgeons and the International College of Surgeons. He was a past president of the Bergen County Medical Society; a trustee of the Academy of Medicine of Northern New Jersey; and a member of New Jersey State Medical Association and the American Medical Association. He was certified by both the American Board of Ophthalmology and the American Board of Otolaryngology.

Dr. Liva died on August 12, 1953.

HARRY WEBSTER LYMAN

Dr. Harry Webster Lyman was born in Cedar Rapids, Iowa, on March 10, 1873, and died in St. Louis, Missouri, on May 6, 1954.

Dr. Lyman received his degree in medicine from St. Louis College of Physicians and Surgeons in 1895, and began the practice of medicine that same year in St. Louis. He did his postgraduate work at Central London E.N.T. Hospital in 1900 and at the University of Pennsylvania in 1915. He was a specialist certified by the American Board of Otolaryngology.

A Life Fellow of the American Academy of Ophthalmology and Otolaryngology, he served as Vice-President of the Academy in 1929. He was a fellow of the American College of Suregons, Past-President of the American Laryngological, Rhinological and Otological Society, and a member of the American Laryngological Association, the American Otological Society, and the Ear, Nose & Throat Club of St. Louis.

Dr. Lyman was emeritus professor of clinical otolaryngology at Washington University School of Medicine, where he joined the faculty in 1910 and served continuously. He was affiliated with Barnes, Evangelical Deaconess, Jewish, St. Louis Children's, McMillan, and St. Louis Maternity hospitals, and the Shriners' Hospital for Crippled Children. Dr. Lyman served in the Armed Forces during World War I, and was consultant to the Veterans Administration Hospital and the U. S. Marine Hospital in St. Louis.

Surviving are his wife, a son, Dr. Edward H. Lyman, a daughter, Mrs. Allan E. Clark, and three grandchildren.

JAMES CLYDE MARKEL

Dr. James Clyde Markel was born in 1877, and died October 1, 1953. Dr. Markel was a graduate of the University of Pennsylvania Department of Medicine, Philadelphia, in 1904. He was a specialist certified by the American Board of Ophthalmology.

A Life Fellow of the American Academy of Ophthalmology and Otolaryngology, Dr. Markel was also a fellow of the American College of Surgeons. He was affiliated with Southside and Eye and Ear hospitals in Pittsburgh.

DONALD CECIL McFARLANE

Dr. Donald Cecil McFarlane was born in Dorchester, Ontario, on July 13, 1892, and died in London, Ontario, on January 14, 1954. He received his degree in medicine from the University of Western Ontario Faculty of Medicine, London, in 1916.

Dr. McFarlane did his postgraduate work at the Manhattan Eye, Ear and Throat Hospital, New York, and began the practice of medicine in London, Ontario, in 1925.

In 1947 Dr. McFarlane was made a fellow of the American College of Surgeons, and in 1951 a fellow of the Royal College of Physicians and Surgeons of Canada.

A Fellow of the American Academy of Ophthalmology and Otolaryngology, Dr. McFarlane was professor and head of Department of Ophthalmology, Otology, Rhinology and Laryngology at the University of Western Ontario Faculty of Medicine, and Chief of the EENT Section of Victoria Hospital. He was a specialist certified by the American Board of Otolaryngology. He also served in the Canadian Army from 1917 to 1919.

Surviving Dr. McFarlane are his widow, Laura Thompson McFarlane, and two sons, Dr. Donald Cecil McFarlane, Jr., and Dr. Robert Malcolm McFarlane.

ERNEST CHARLES MEAD

Dr. Ernest Charles Mead of Gainesville, Texas, was born on July 9, 1885. He received his degree in medicine from the Chicago College of Medicine and Surgery in 1913, and was a specialist certified by the American Board of Otolaryngology in 1926.

A Fellow of the American Academy of Ophthalmology and Otolaryngology, Dr. Mead was also a fellow of the American College of Surgeons, and a member of the American Medical Association and of state and local medical organizations.

Dr. Mead died on February 1, 1954.

HENRY MINSKY

Dr. Henry Minsky was born in New York City, on June 21, 1895, and died in Rhinebeck, New York, on May 23, 1954. Dr. Minsky received his degree in medicine from Columbia University College of Physicians and Surgeons, New York, in 1919, and served his internship at Lebanon Hospital. A specialist certified by the American Board of Ophthalmology, Dr. Minsky was associate clinical professor of ophthalmology at his alma mater; on the staff of the Mount Sinai Hospital; and consultant, Maimonides Hospital, Liberty, Hillside Hospital, Bellerose, New York, and Norwalk (Connecticut) General Hospital.

Dr. Minsky entered the private practice of ophthalmology following a lecture tour of the country with two of his teachers, Dr. Oscar Diem and Dr. Ernst Fuchs. Recenty Dr. Minsky completed a study of eye changes in high blood pressure. He was the author of many papers and a contributor to the book "Ophthalmology in the War Years."

A Senior Fellow of the American Academy of Ophthalmology and Otolaryngology, Dr. Minsky was a fellow of the American College of Surgeons, and a member of the American Board of Ophthalmology, the New York Society for Clinical Ophthalmology and the New York State Medical Society. He was also past president of the Metropolitan Medical Society.

Surviving Dr. Minsky are his widow, Mrs. Fanny Reiser Minsky, a son, Marvin, and two daughters, Charlotte and Ruth.

SAMUEL DACE McPHERSON

Dr. Samuel Dace McPherson was born at Liberty, North Carolina, on April 20, 1873, and died in Durham, on September 12, 1953. He was a postgraduate student at the University of Vienna in 1929, and also did postgraduate work at New York Polyclinic and the New York Eye & Ear Infirmary from 1909 to 1911. He received his degree in medicine from the University of Maryland School of Medi-

cine and College of Physicians and Surgeons, Baltimore, in 1903, and began the practice of medicine in North Carolina during the same year.

Dr. McPherson was the founder of the McPherson Hospital, and chief of staff until his death. He was on the honorary staff of the Lincoln Hospital and the Watts Hospital, and instructor in ophthalmology at the Duke University School of Medicine.

A specialist certified by the American Board of Otolaryngology, Dr. McPherson was a Fellow of the American Academy of Ophthalmology and Otolaryngology, and the American College of Surgeons, and a member of the American Medical Association, North Carolina Eye, Ear, Nose and Throat Society, Southern Medical Association, Tri-State Medical Society, formerly chairman of the Section on Ophthalmology and Otolaryngology of the North Carolina State Medical Society, chairman of the Durham County Board of Health for twenty years, and formerly president of the Durham-Orange County Medical Society.

Surviving are a daughter, Mrs. F. G. Harper, Hickory, North Carolina, and a son, Dr. S. D. McPherson, Jr., Durham, North Carolina.

CHESTER RUDOLPH MILLS

Dr. Chester Rudolph Mills was born in Needham, Massachusetts, on April 12, 1893, and died in the city of his birth on April 12, 1953. He received his degree in medicine from Harvard Medical School, Boston, in 1919, and began the practice of medicine in Boston and Needham, Massachusetts, in 1921. Dr. Mills was clinical professor of otolaryngology at Tufts College Medical School, affiliated with Boston City and Faulkner hospitals in Boston and Newton-Wellesley Hospital in Newton Falls, and was on the staff of the Glover Memorial Hospital in Needham.

A specialist certified by the American Board of Otolaryngology, Dr. Mills was a Fellow of the American Academy of Ophthalmology and Otolaryngology, and a member of the New England Otolaryngological Society, the Harvard Club of Boston, and past president of both Needham Rotary Club and Boston City Hospital Alumni Association. He served overseas during World War I, and was a past master of the Norfolk Lodge of Masons, Needham.

Surviving are his wife, Mrs. Alice Mills, a son Gregg, and a daughter, Jane.

WELLWOOD MACK NESBIT

Dr. Wellwood Mack Nesbit was born in Mt. Auburn, Iowa, on July 22, 1891, and died in Madison, Wisconsin, on October 27, 1953. He graduated from the University of Iowa with a Bachelor of Science degree and received his degree in medicine from Rush Medical College, Chicago, in 1917. He did his postgraduate work at Washington University School of Medicine, St. Louis, and began the practice of medicine in St. Louis in 1918. At the time of his death he was Professor of Otolaryngology at University of Wisconsin Medical School. He was affiliated with Madison General and State of Wisconsin General hospitals.

A specialist certified by the American Board of Otolaryngology, he was a Fellow of the American Academy of Ophthalmology and Otolaryngology, and a member of the American Medical Association.

Surviving are his four daughters, Mrs. Nancy Taborsky, Mrs. Suzanne Usher, Mrs. Jack Tausend, and Martha Nesbit.

ARTHUR PALMER

Dr. Arthur Palmer was born in Oswego, New York, on August 30, 1889, and died in New York, on February 18, 1954. He received his degree in medicine from Cornell University Medical College, New York, in 1915, and was associate professor of clinical surgery (otolaryngology) at his alma mater.

A specialist certified by the American Board of Otolaryngology and the American Board of Plastic Surgery, Dr. Palmer was attending surgeon, New York Hospital; consultant, Mather Memorial Hospital in Port Jefferson, New York Reconstruction Hospital in West Haverstraw, New York, and the New York Infirmary for Women and Children.

A Senior Fellow of the American Academy of Ophthalmology and Otolaryngology, Dr. Palmer was a member of the American Society of Plastic and Reconstructive Surgery; American Laryngological, Rhinological, and Otological Society; New York Academy of Medicine; Association of Military Surgeons

of the United States; Harvey Society; American Association for the Advancement of Science; Nu Sigma Nu; and Lambda Chi Alpha. He was past president, recording secretary, and trustee of the Society of Plastic and Reconstructive Surgery. He served in France during World War I, and continued as a reserve officer after the war, holding the rank of Major from 1924 to 1929.

AVERY deHART PRANGEN

Dr. Avery deHart Prangen was born in Hornell, New York, on June 5, 1890, and died in Rochester, Minnesota, on January 30, 1954. He received the degree of Bachelor of Science in 1913, and his degree in medicine in 1915 from the University of Michigan Medical School, Ann Arbor.

Dr. Prangen entered the Mayo Clinic as an assistant in ophthalmology, February 15, 1918, and became associate the following year. He held this position as well as that of Associate Professor of Ophthalmology in the Mayo Foundation, University of Minnesota, until he retired in 1952 because of ill health.

A specialist certified by the American Board of Ophthalmology, Dr. Prangen served on the staff of Worrall Hospital, and was first chairman of the National Interprofessional Committee on Eye Care.

Dr. Prangen was a Life Fellow of the American Academy of Ophthalmology and Otolaryngology, a member of the Minnesota Academy of Ophthalmology and Otolaryngology, American Ophthalmological Society, Association for Research in Ophthalmology, the Alumni Association of the Mayo Foundation, Alpha Kappa Kappa, and Sigma Xi.

Surviving are his wife, Mrs. Alice Conley Prangen, a daughter, Mrs. David Judd, Eugene, Oregon, and a son, William, Minneapolis, Minnesota.

JOSIAH EDMUND QUINCY

Dr. Josiah Edmund Quincy, a Fellow of the American Academy of Ophthalmology and Otolaryngology, was born in Salem, Massachusetts, on September 16, 1896, and died in Boston, Massachusetts, on January 27, 1954. He received his degree in medicine from Northwestern University Medical School, Chicago, in 1922, and was a specialist certified by the American Board of Otolaryngology.

Dr. Quincy was an instructor in otolaryngology at Harvard Medical School from 1941 to 1951, consulting surgeon in otolaryngology at the Massachusetts Eye and Ear Infirmary in 1950, and on the staffs of Symmes Arlington Hospital in Arlington, and the New England and Faulkner hospitals.

Surviving are his wife, Dorothy C. Quincy, and three daughters, Mrs. Richard Sears, Atlanta, Georgia, Mrs. Richard Boege, Mount Holly, New Jersey, and Miss Sally Quincy, Chestnut Hill, Massacusetts.

HECTOR GEORGE LA REAU

Dr. Hector George LaReau of Chicago was born on May 8, 1882. He received his degree in medicine from Marquette University School of Medicine, Milwaukee, in 1913. A specialist certified by the American Board of Otolaryngology, he was affiliated with Martha Washington Hospital in Chicago.

Dr. LaReau was a Fellow of the American Academy of Ophthalmology and Otolaryngology. He served in the Armed Forces during World War I.

Dr. LaReau died March 4, 1954.

JAMES ANDREW MERLE RUSSELL

Dr. James Andrew Merle Russell was born in Erie, Pennsylvania, on June 6, 1892, and died in the city of his birth on August 18, 1954. He received his medical degree from the University of Pennsylvania School of Medicine, Philadelphia, in 1917. In 1925 he did work in bronchoscopy in Vienna. At the time of his death, Dr. Russell was Chief of Bronchoscopy and Otolaryngology at both Hamot and St. Vincent's hospitals in Erie.

A specialist certified by the American Board of Otolaryngology, Dr. Russell was a Life Fellow of the American Academy of Ophthalmology and Otolaryngology, and a member of the Erie County Medical Society. He served in World War I as Lieutenant in the Medical Corps.

Surviving are his wife and two daughters.

WILLIAM MAURICE SMIT

Dr. William Maurice Smit was born in St. Louis, Missouri, on December 15, 1881, and died in the city of his birth on

March 14, 1954. He obtained his preliminary education at Toensfeldt Educational Institute, Public Schools, and Philadelphia Preparatory School, and received his degree in medicine from the Chicago College of Medicine and Surgery in 1914.

Dr. Smit did postgraduate work in the clinics in Chicago, on tuberculosis at Denver and Colorado Springs, served as assistant to Dr. W. W. Pearson, Des Moines, Iowa, for two years, and studied in Vienna in 1923 and Paris and London in 1927. Dr. Smit was assistant from 1920 to 1924, instructor from 1924 to 1931, and senior instructor from 1931 to 1936 in the Department of Otolaryngology at St. Louis University School of Medicine; assistant otolaryngologist at Alexian Brothers Hospital from 1919 to 1920 and Jewish Hospital from 1920 to 1928; and he also served on the staffs of the Jewish Hospital, St. Mary's Group of Hospitals, and the Missouri Pacific Hospital in St. Louis.

A Fellow of the American Academy of Ophthalmology and Otolaryngology, he was also a corresponding member of La Societe de Laryngologie des Hopitaux des Paris.

Surviving Dr. Smit are his wife, a son, Dr. Herbert M. Smit, and two daughters, Mrs. Helen Handelman and Mrs. Lael Rose Lester.

ROBERT ARVIL SMITH

Dr. Robert Arvil Smith was born in Greensboro, Indiana, on September 11, 1902, and died in New Castle, Indiana, on December 7, 1953. He received his degree in medicine from Indiana University School of Medicine, Indianapolis, in 1926. He did his postgraduate work in ear, nose and throat at the University of Chicago School of Medicine in 1929. Later postgraduate work included a course in allergy at the Hansel Foundation in 1948, and the Barnhill Course—Anatomy of Head and Neck.

A specialist certified by the American Board of Otolaryngology, Dr. Smith began the practice of medicine in New Castle, Indiana, in 1927. He maintained his practice there until his death, except for a period of military service during World War II. From 1941 to 1945 he served as Chief of EENT Service, Fitzsimmons General Hospital, Denver, Colorado.

A Fellow of the American Academy of Ophthalmology and Otolaryngology, Dr. Smith was also a fellow of the American College of Surgeons, and for many years served as secretary of the Henry County Medical Society. In 1953 he was elected President of the Indiana Academy of Ophthalmology and Otolaryngology. Dr. Smith was also a member of the American Medical Association, Pan-American Association of Ophthalmology, and American Society of Ophthalmologic and Otolaryngologic Allergy. He held membership in many civic organizations.

Surviving Dr. Smith is his widow, Mrs. Margaret Carpenter Smith.

HENRY STANBERY

Dr. Henry Stanbery was born in Pomeroy, Ohio, on November 25, 1872, and died in Cincinnati, Ohio, on September 21, 1953. He received his degree in medicine from Miami Medical College, Cincinnati, in 1899, and began the practice of medicine in Cincinnati in 1899. He interned at the United States Marine Hospital, and did his postgraduate work at Johns Hopkins Hospital, Baltimore, and the New York Eye and Ear Infirmary.

A Life Fellow of the American Academy of Ophthalmology and Otolaryngology, Dr. Stanbery was also a member of the American Medical Association, Cincinnati Academy of Medicine, and Psi Upsilon Fraternity. He served in France as a Major during World War I.

Surviving are his wife, Mrs. Martha Weber Stanbery, and two brothers, Philemon B. Stanbery, Cincinnati, and Hart Stanbery, Pomeroy, Ohio.

WILLIAM DAVID STINSON

Dr. William David Stinson of Memphis, Tennessee, was born in Salem, Illinois, on April 15, 1894. He received his medical degree from the University of Michigan Medical School, Ann Arbor, in 1920 and was certified by the American Board of Otolaryngology in 1928. At the time of his death, he was Associate Professor of Otology, Laryngology, and Rhinology at the University of Tennessee College of Medicine. Dr. Stinson also served as chief and president of the staff of Baptist Memorial Hospital in Memphis.

A Fellow of the American Academy of Ophthalmology and Otolaryngology, Dr.

Stinson was also a member of the American Laryngological, Rhinological and Otological Society. In 1951 he was president of the Memphis and Shelby County Medical Society, and for many years he served as secretary of the Tennessee Academy of Ophthalmology and Otolaryngology.

Dr. Stinson died on October 18, 1953, at the age of 59.

JEROME FRANK STRAUSS

Dr. Jerome Frank Strauss was born in Chicago, Illinois, on April 5, 1889, and died in the city of his birth on May 24, 1954. His preliminary education was received at the University of Chicago, and he received his degree in medicine from Rush Medical College, Chicago, in 1912. He did his postgraduate work in Vienna in 1930.

Dr. Strauss began the practice of medicine in Chicago in 1914, but served as a medical officer overseas during World War I. He was formerly clinical associate in otolaryngology at the University of Illinois College of Medicine, where he also served as chairman of the department and president of the medical staff, and a senior attending otolaryngologist at the Michael Reese Hospital.

Dr. Strauss was a specialist certified by the American Board of Otolaryngology. He was a Fellow of the American Academy of Ophthalmology and Otolaryngology, and a member of the Institute of Medicine of Chicago, the Chicago Laryngological Society, for which he was a past president, the American Medical Association, and the American Laryngological, Rhinological and Otological Society.

Surviving Dr. Strauss are his wife, Mrs. Lois Strauss, a son, Dr. Jerome Frank Strauss, Jr., and a daughter, Mary Strauss Lawton.

PAUL JACOB STUEBER

Dr. Paul Jacob Stueber, a Life Fellow of the American Academy of Ophthalmology and Otolaryngology, was born in Petersburg, Illinois, on February 17, 1886, and died in Lima, Ohio, on December 22, 1953. He obtained his preliminary education at Oberlin Academy, Oberlin, Ohio, and received his medical degree from the University of Michigan Department of Medicine and Surgery, Ann Arbor, in 1912. A specialist certified by the American Board of Ophthalmology, he began the practice of his specialty in Lima, Ohio, in 1912, where he was on the staffs of the Lima Memorial Hospital and St. Rita's Hospital.

Surviving Dr. Stueber are his widow, Mrs. Alice Williamson Stueber, a son, Dr. Paul J. Stueber, Jr., Cleveland, and three grandchildren.

FRED SANBORN THORNE

Dr. Fred Sanborn Thorne was born in Augusta, Maine, on November 27, 1890, and died in Newton, Massachusetts, on December 6, 1953. He received his medical degree from Harvard Medical School, Boston, in 1918, and was assistant in ophthalmology at his alma mater from 1942 to 1947. He began the practice of his specialty in Boston in 1922, and served as surgeon at the Massachusetts Eye and Ear Infirmary, retiring in 1953. He was also on the staffs of the Sancta Maria Hospital in Cambridge, Brooks Hospital in Brookline, Symmes Arlington Hospital in Arlington, Massachusetts, Carney Hospital in Boston, and the Newton-Wellesley Hospital in Newton Lower Falls, Massachusetts.

Dr. Thorne was a specialist certified by the American Board of Ophthalmology. A Fellow of the American Academy of Ophthalmology and Otolaryngology, he was also a member of the New England Ophthalmological Society of which he was a past vice-president, the American Medical Association, and the Massachusetts Medical Society.

Surviving are his widow, Mrs. Emma Mathilde Deutschle Thorne, and a sister, Marjorie Thorne Hayes.

KARL NORVIN VICTOR

Dr. Karl Norvin Victor was born in Mexico, Missouri, on February 20, 1900, and died in Louisville, Kentucky, on March 10, 1954. He received his medical degree from the University of Louisville School of Medicine in 1924, and later served as an Associate in Otorhinolaryngology at his alma mater. He did postgraduate work at Roosevelt Hospital and New York Polyclinic Medical School and Hospital in New York.

Dr. Victor was affiliated with St. Mary and Elizabeth Hospital, St. Anthony's

Hospital, St. Joseph Infirmary, Red Cross Hospital, Kentucky Baptist Hospital, Norton Memorial Infirmary, and the Jewish Hospital in Louisville.

A Fellow of the American Academy of Ophthalmology and Otolaryngology, Dr. Victor was also a member of the American Medical Association, Southern Medical Association, Kentucky State Medical Association, Kentucky State Eye and Ear Society, Jefferson County Medical Society, and the Louisville Eye and Ear Society.

Dr. Victor is survived by his widow, Mrs. Julia Felsenthal Victor, a daughter, Mrs. Eugene Uhrich, and a son, Karl N. Victor, Jr.

WALTER FRANZ von ZELINSKI

Dr. Walter Franz von Zelinsky of Santa Barbara, California, was born July 16, 1882. He received his degree in medicine from Bennett Medical College, Chicago, in 1908, and was a specialist certified by the American Board of Ophthalmology. Serving during World Wars I and II, he entered the regular army as a Major on September 11, 1920, was promoted to Colonel on June 2, 1943, and was retired September 30, 1945.

A Fellow of the American Academy of Ophthalmology and Otolaryngology, Dr. von Zelinsky was also a fellow of the American College of Surgeons and of the International College of Surgeons. He was affiliated with Santa Barbara Cottage Hospital.

Dr. von Zelinsky died on December 26, 1953, at the age of 71.

RICHARD WALDAPFEL

Dr. Richard Waldapfel of Grand Junction, Colorado, died at Presbyterian Hospital in Denver on September 26, 1953, of carcinoma of the pancreas at the age of 58.

As a member of the famous Hajek Klinik of Vienna prior to the Hitler regime, Dr. Waldapfel was popular with American physicians who frequented his courses in laryngology and rhinology. He left Vienna in 1938 and settled in Grand Junction, where he practiced in the field of eye, ear, nose and throat. He received his degree in medicine from Medizinische Fakultat der Universitat, Vienna, Austria, in 1921. A specialist certified by the American Board of Otolaryngology, Dr. Waldapfel was on the staff of St. Mary's Hospital and the Veterans Administration Hospital in Grand Junction at the time of his death.

Dr. Waldapfel eminently portrayed the complete man by his many humanitarian and cultural interests. His hobbies included painting, skiing, music, floral culture, photography, and the training of fine dogs. During the past two years of his life he studied art and produced many outstanding paintings, both in oil and in water color. He was the recipient of the first prize in each class at the exhibit of the American Physicians Art Association held in connection with the 1953 convention of the American Medical Association in New York City.

A keen student of his chosen field, Dr. Waldapfel contributed many important clinical and research papers in both the German and the English language. He was frequently in demand as a lecturer before postgraduate groups in this country. Besides belonging to the American Medical Association and its local subsidiaries, Dr. Waldapfel was a member of the Colorado Otolaryngological Society, the American Academy of Ophthalmology and Otolaryngology, the Pacific Coast Oto-Ophthalmological Society, the American Society for Plastic Surgery, the Los Angeles Research Club, and the American College of Surgeons.

TEACHERS' SECTION IN OTOLARYNGOLOGY

October 11, 1953

LAWRENCE R. BOIES, M.D., *Chairman*

CHAIRMAN BOIES: This is the fourth successive year in which this "new" Teachers' Section is meeting. The first meeting was well attended and I have sensed a growing interest and enthusiasm for this type of a forum in which we can freely discuss the problems that interest so many of us. We have considered the problems of undergraduate teaching before but I believe that this is a subject that needs continuous study. Dr. Lederer will bring you his thoughts concerning our objectives in this important field.

Objectives in Undergraduate Teaching

FRANCIS L. LEDERER, M.D.
CHICAGO, ILL.

Dr. Boies, Members of the Teachers' Section, Guests of the Academy: Objectives in undergraduate teaching are not readily set forth before a group of men so well versed in teaching technics. However, I would like to tell you a few of our thoughts in this connection.

In lush times when the demand of students for admission to medical colleges was much greater than the places available, no unusual concern was evidenced in providing an adequate curriculum for the undergraduate. Fewer students applying for admission is but one of the factors which arouse educators to action. The economics of a large investment incumbent upon the individual student and the medical college and the years of preparation present realistic patterns in a competitive society.

The present-day student has come to expect the school of his choice to provide his needs based upon modern concepts.

> Education for our times includes thinking, as well as knowing. A person may be well stuffed with information but still may be very poorly educated. It is the purpose of schools to develop in students the willingness and ability to do the things that contribute to their physical, mental and spiritual welfare and which are in accordance with the best interests of the society in which they live. (Willard E. Givens, NEA News, Sept. 14, 1951)

In such consideration there must be a careful distinction made between the essentials and nonessentials of good medical teaching. Inasmuch as medical schools differ physically, in their faculty-student ratios, administratively, as well as in other standards, it is difficult to present an over-all estimate of what constitutes the ideal situation. It is certain that buildings in themselves are meaningless if the personnel who occupy them fail in the ultimate goal of the education of the student. As has been frequently stated, "Teaching is the most useful type of development that can be attained by a member of the faculty." On the part of the student, however, as has been so aptly stated by Robert Hutchins, "Education is largely a matter of will. If a man is to be educated, he must want to be educated."

Undergraduate teaching is more than just a program, it involves administrative support, the type of teachers who will make the students care about learning, proper access to good clinical material and the abundance of visual aids which will enable the instruction to be interesting and realistic. Administratively, the department of otolaryngology

must be autonomous, alert and militant in the maintenance of its rightful domain in curricular apportionment. It must maintain high standards of achievement so as to support stakes of interest in various teaching and service disciplines. Departmental direction must scrupulously avoid "riding high" in the single-mindedness of one field of interest while neglecting, and thereby losing, other acknowledged otolaryngologic areas. As medical and surgical knowledge progresses, so should the specialty express its awareness by improving and modernizing its horizons.

Granted that colleges of medicine carefully screen applicants for admission, we should have no further thought to offer to this important phase. While intellectual standards are well stated and followed, we are not certain that the emotional and physical status of the applicant is as effectively evaluated. We are educationally profligate when it is assumed that there are other better prepared candidates for admission. We are much more concerned with the quality of the men and women who are to teach and lead these students. The art of teaching will always remain an individual effort inasmuch as our educational backgrounds do not include formal preparation for such a career. There is a tendency for medical education administrators to continue to neglect the preparation of teachers in the field of medicine. Teaching is a special art, craft and skill. The fact that one is a good practicing clinician does not assure successful teaching qualities in the classroom and the teaching clinic. Medical instruction reflects this neglect. One illustration is the poor and infrequent scientific use of audiovisual aids. The field of engineering has, in recent years, concerned itself with the preparation of teachers of engineering subjects. We should have concern with the preparation of teachers of medical subjects. Medical education still subscribes to the outmoded dictum, "Teaching is telling, and telling is teaching."

There is a growing tendency to encourage full-time clinical teachers, at least as heads of departments, maintaining that continuity and long-term planning of research and teaching programs are enhanced thereby. However, the part-time faculty member has an acknowledged place in medical education. Ideally, the full-time faculty forms the nucleus which is responsible for the organization and direction of teaching, for research, for administration, while the part-time faculty carries out much of the clinical teaching, broadens the base of medical training, supplies many inspirations on a personal level, conveying the "humanities" so essential to the motivations and development of the prospective physician. The influence of this early association with able clinicians may in itself be the beginning of an otolaryngologic interest, which eventually would result in the choice of this field for specialization.

How more effectively to utilize the part-time clinical teacher has been the basis of considerable study and controversy. Young men start out after training imbued with an idea of an academic career, or at least in maintaining a teaching connection. Economics then enters as a green-eyed monster and continues to dominate the picture. Initially the stipend is insufficient to attract and then, in the not too distant future, the increasing practice makes it too insignificant to make it worth while. Full-time, no less than part-time, teaching will always require missionary zeal and the willingness to concede something of material worth in order to do that which is inherently desirable.

Too often the part-time teacher starts out with enthusiasm, gradually to make his clinic attendance a boring, routine chore. This is to be construed not as a

normal attrition but as the insecurity he feels as the result of decreasing responsibility. He no longer feels he belongs when the newer generations of otolaryngologic aspirants seemingly encroach on his domain and modify or even nullify the importance of his role. To combat the possibility of a self-imposed isolation, participation in rounds, surgical services, conferences and seminars should be encouraged. Whenever possible, his advice should be sought so as to make him feel an integral part of departmental progress.

The willingness to teach is not enough. The eager volunteer is frequently without qualification and in many instances seeks an appointment for the "window dressing" that may accrue as a prestige factor.

It is clear, then, that an essential objective of undergraduate teaching is concerned with the teacher himself. I give you some thoughts from Gilbert Highet, some useful factual material about the teacher:

1. He must know his subject and continue to enlarge conscientiously his knowledge.
2. He must like his subject and be sincere in his desire to teach.
3. He must like his students, want to know them, and exercise patience.
4. He must enlarge the borders of the contiguous fields of thought, know more than his subject, and have wide and lively intellectual interests.
5. He must possess a quality of humor in the development of the style best suited to his talents and the subject under discussion, make it vivid, relevant and memorable.
6. He must possess such clarity so that he may teach so all may understand, keeping his teaching alive and dynamic and prevent his mind from falling into the disease of authority and age, which is paralysis.
7. He must constantly refresh his subject by transfusions of new vitality and interest.

I thought those might be of interest to you.

Lip service is still rendered the following formula: It is pedagogically and psychologically sound to structure medical education as pre-clinical "antecedent to" clinical instruction. Professional educators are quite convinced that this is less effective than it might be. Basic science subjects should be related earlier to the clinical processes. This can be done in two ways: (1) by moving the basic science courses into a later position in the curriculum or (2) by moving the clinical instruction to an earlier position. Basic science courses need to be oriented in a new direction. The habits of mind of inquiry, scientific thinking, critical examination of "the teacher's way of doing things" can be taught in the processes of basic science instruction. Almost any of our education is taken seriously. The teaching of fundamental sciences now addresses itself to the task of training minds to function as well as to load them with "rememberable" facts. Medical teaching is still too burdened with the continental type of outlook of doing what the master does.

In the frame of reference of the American community, the physician remains one of the most uneducated persons we have. This is not because American boys and girls do not wish to know something more than the craftsman-trade school concepts, but because medicine needs more to be related to the person functioning in his total environment. The struggle of preventive medicine in modern medical education underscores this idea. This lack of cultural education and "preparedness for community service as a citizen" must honestly not be wholly credited to medical education. Modern high schools and colleges are trying to understand this too. These institutions are the precursors of medical training.

Medical education should include an emphasis on the urgent need for training in skills in interpersonal relationships required in consultation of pa-

tients. The fields of interviewing and interpersonal dynamics have developed outside of medicine. Medicine, however, has not fully embraced or used these knowledges and skills, despite the fact that medicine is, by the Hippocratic definition, exclusively an interpersonal relationship.

It is impossible for a student to assimilate mass custom-built information thrust upon him in x-number of hours in a particular course. It is best presented to him in divided doses, not necessarily as anatomical units but in comprehensively correlating the specialty knowledge with his study of anatomy, physiology, bacteriology and the other basic subjects. Such integration tends to teach students to utilize facts rather than merely memorize and collect them. Many educators are of the opinion that the facts and principles of such fields would be enhanced by association reference points. This requires less departmentalization and more integration of the various disciplines related to the total person in health and disease. This was recently expressed by Sir Russel Brain when he said, "We should achieve the integrative view of the human organism with application at the physiological, psychological and social levels of thought."

Better correlation between otolaryngology and the other fields of medicine and surgery will be achieved by spacing the teaching of the subject over the entire four years. Protracted experiences in the basic sciences and with the clinical branches will get away from the conventional method. Continuity must be maintained throughout the academic program carried out in the following fundamental manner:

First Year

Correlative teaching in the Basic Sciences.

Second Year

Cooperative presentation of technics of examination in studying growth and development and as part of the instruction in the physical examination of the patient.

Third Year

Survey of such areas of otolaryngology as maxillofacial surgery, audiology, and bronchoesophagology by means of clerkships, audiovisual presentations and outpatient clinics.

Fourth Year

Comprehensive evaluation of the total person in demonstration clinics, in which student discussion is encouraged on a physician-consultant basis.

Early contact with patients is good but not enough. Physicians of the next decade will be in a world in which they will find themselves embarrassed by the advances in the psychological and social sciences, whose contributions to the total person are accumulating rapidly. Dr. Herbert Koepp-Baker relates that when he first met Raymond Allen for an initial interview, prior to his joining us at the University of Illinois, he asked him the question: "What is medicine?" Dr. Allen said: "Anything that affects the health, happiness and efficiency of the person is the province of medicine." This is a big order. It should be a goal of medical education, and the contribution of the so-called nonmedical areas must be invited and accepted by the medical educator as a part of medical instruction. This is well demonstrated in our work in the audiological field. After all, the objectives must aim toward the acquisition of factual knowledge based on an understanding of the dynamics of the disturbed body physiology, and the ability to apply this knowledge to individual patients. We agree with others that the learning experience is best provided in small groups of students who have close clinical contact with patients. One is reminded that "to study the phenomenon of disease without books is to sail an uncharted sea; while to study books without patients is not to go to sea at all" (Osler). Larger groups can be given controlled instruction on how to acquire factual knowledge.

The trend we have followed has been in the direction of systematizing the knowledge in the field of otolaryngology on the basis of common symptoms and signs and to correlate and integrate the study of physiology and medicine, by presenting the dynamic, underlying pathologic physiology of those particular symptoms. Organ systems become the focus rather than subjects, the aim being to present the patient as a whole and in reference to his total environment, not only the ills of his body or his mind.

Conjoint teaching can provide an opportunity for a realistic presentation. Integrating otolaryngological information into the body of instruction of other medical and surgical disciplines was declared a need by the Teachers' Section of the Academy of Ophthalmology and Otolaryngology when it endorsed a minimum of 40 hours of teaching in this field. In his report "Otolaryngology Looks to the Future," Gordon D. Hoople hoped to reach the understanding ears of those responsible for constructive changes in the curriculum. Concern is voiced because these men are frequently unaware of the needs of the physician, to say nothing of those of an unwary public. The fantasy that the general physician or the general surgeon knows all or can do all must be realistically attacked as being pure "poppycock." It may be good technic to tell a Marine in training that he is a world-beater and blind him to the realities of an enemy bullet but the practitioner's armor is pierced at the expense of a patient's unfortunate experience.

The tirade against specialists and specialization is by no means new. This has been going on since the thirteenth century. However, there have been those who were sensible enough to recognize the true worth of special fields of medicine. In 1877 Hughlings Jackson stated:

> As scientific medical research goes on, there is a greater specialization of investigation, just as, in the development of society, there is an increasing specialization, called division of labour. This being so, all the more need is there that there should be greater integration, just as along with the division of labour there is need for cooperation of labourers. There is no harm in studying a special subject; the harm is in doing any kind of special work with a narrow aim and a narrow mind. Differentiation of medical investigation has led to results of inestimable value. If, in the smallest degree, I succeed in furthering the integration which should quickly follow this necessary differentiation, I shall feel that my address will be of some little value.

Recent action by a committee of the American Medical Association recommended the abolition of otolaryngology (among a few others of the specialties not represented on the committee) as a part of internship training. A fundamental reason was singled out for otolaryngology stating:

> Such, for example, is often the case among otolaryngologists, for whom the development of chemotherapy and antibiotics has changed the scope of practice and who express concern about paucity of candidates for their residencies. It is our feeling that their desired educational approach to interns can be achieved through lively clinical conferences and the proper use of consultations far better than by rapid rotation of assignments.

The intern, not having been given adequate otolaryngology as an undergraduate, is therefore asked to obtain his knowledge through consultations while serving the so-called "major" departments. This is the blight area of medicine which will account for the prevalence of iatrogenicity affecting a large percentage of the population. Instead of attacking the ethics of surgeons, let us uproot the fundamental evils by which the patients "got that way" in the first place, viz., the inadequacy in the preparation of the student.

In closing, may I with every humility disclaim originality of thought or pur-

pose. Too many forebears in otolaryngology made our places in this day secure. They did not, however, advocate that we remain static, but rather that we develop and grow with the opportunities that world progress offered. In the role of critic, I am reminded of something Longfellow said:

> Some critics are like chimney sweepers; they put out the fire below, or frighten the swallows from their nests above; they scrape a long time in the chimney, cover themselves with soot, and bring nothing away but a bag of cinders, and then sing from the top of the house as if they had built it.

CHAIRMAN BOIES: This interesting, philosophical discussion is now open for general discussion. Who wants the floor?

Dr. Roberts, you have expressed yourself in writing.

SAM E. ROBERTS, M.D. (Kansas City, Mo.): I did express myself, and I don't believe my good friend entirely agrees. I heard only a part of his talk.

The basic sciences, of course, should be taught even at the graduate level. It would be of great value for all of us to take graduate courses in physiology, biochemistry and nutrition. These subjects could all be taught at these great meetings.

We must admit the fact that the surgical field in otolaryngology for the man in the small community has definitely narrowed—no matter how capable he may be. The undergraduate has been taught to care for most acute conditions and the general surgeon and general practitioner do many of the minor surgical procedures.

I do not want to add more years to our graduate training, but perhaps the years that we now have could be better utilized. We must realize that there is something besides surgery in otolaryngology.

It is often well to make an honest review, an appraisal of oneself. For a number of months I kept a tab in each office, and as patients would come through I classified them in this manner: those I really helped; those I helped but little; those for whom I could do nothing, and those to whom I had done harm. It was surprising how many were in the last three classes: "but little," "some harm" and "could do nothing."

In reviewing many of my postoperative sinus surgical cases, I found many whom I am sure would have been in better condition without surgical interference. I often, in dictating at an original examination, say "Certain surgery may be necessary but we will postpone it for a while." So many of these cases never come to operation.

CHAIRMAN BOIES: Would anyone else like to discuss Dr. Lederer's paper?

At this point I am going to ask Dr. Hoople to express an idea on which he wants some information.

GORDON D. HOOPLE, M.D. (Syracuse, N. Y.): This particular exercise is not on the program. It has been very heartening to the Chairman of your committee and the other members of it to see the continued interest in this Teachers' Section from year to year, and maybe once in a while, as Dr. Roberts just suggested, it is a good idea to have some self-appraisal.

One of the things that we have all been concerned about during the last three or four years is the fact that we had a paucity of men applying for residency training in Otolaryngology.

Your committee has thought it might be a good idea to see just how good we are individually in interesting men to take on Otolaryngology. In this room are professors of many of the medical schools of the United States and those

who are interested in teaching Otolaryngology. If we as a group are not interesting young men to take on Otolaryngology, whom do we expect to do the job?

We are proposing to pass out a questionnaire at this time which reads: "How many medical students during the past year have you personally influenced to become Otolaryngologists?" There are two boxes. One says "None" and the other says "Number." We are going to ask you to fill these out, not sign them, so nobody is going to be embarrassed, and between the second and third papers we will announce the score.

CHAIRMAN BOIES: I would like to correct Dr. Hoople in the reference to the heads of departments of medical schools in the United States; I want him to include Canada.

DR. HOOPLE: Thank you, sir.

CHAIRMAN BOIES: I made a survey of our senior class at Minnesota last June to determine if anyone had chosen a field of practice in which he or she had developed a serious interest. Out of a class of approximately 90, 50-odd per cent had chosen general practice, but I was rather pleased to learn that two of them had definitely decided on Otolaryngology. Certainly that was not my influence alone; it was the influence of members of my department. I am sure that there are one or two men in my department who have had a very definite influence on the thinking of undergraduate students, in the contacts they make with them.

Would anyone else like to discuss Dr. Lederer's presentation? If not, I will ask Dr. Lederer to close the discussion.

DR. LEDERER: I am certain my remarks will not influence the ballot, but I have put down "None." I never would consider a medical student in any category other than a man that I want to influence to be a good doctor, primarily. Now, what he is going to do later is quite up to him. I would not poll them; I would not ask them if I were teaching improperly, although we do get from our student council certain appraisals of our entire department, as all other departments do. I do not think I would ask one of my students whether he is going to be an Otolaryngologist any more than I would ask my son if I were a good father.

I do not agree that this is the approach to getting material for Otolaryngology. This is a long-term job; not just the one lecture that they might applaud you for, for whatever entertainment you provided, but the over-all picture as they begin comparing you as a teacher, when they get to their internships, and even when they are taking a medical residency and suddenly discover that they would like to be Otolaryngologists.

So, I would not put too much emphasis on a poll. As a matter of fact, you know what happened to Gallup. He just went into oblivion some years ago. So, I cannot imagine that we are going to learn too much.

I appreciate this thought but I do not know who has been influenced by me. I hope anyone who has been influenced has been influenced properly.

I thank you.

CHAIRMAN BOIES: Quite frequently I receive an inquiry from someone engaged in graduate teaching asking advice regarding a means of keeping, or obtaining, the privilege of caring for certain types of surgery on an otolaryngologic service. Our American Board has been asked for similar answers. The items about which this concern is most often expressed are tumor surgery,

maxillofacial surgery, and plastic surgery of the nose. Some are also concerned about the problem of keeping endoscopic work. This next presentation by Dr. Pressman may answer some of these questions.

Transition in Teaching Services from Ear, Nose and Throat to Head and Neck

JOEL J. PRESSMAN, M.D.
LOS ANGELES, CALIF.

Dr. Boies, Ladies and Gentlemen: On the way into the room this morning I met Dr. Orton. He said he was coming in to hear this presentation, and I told him there was nothing in it that he had not preached for twenty years, but that if he wanted to hear it bounce off the walls from the standpoint of a spectator instead of a speaker, he should come in. This, of course, applies to a great many others. For many years, many among you have preached what I have to repeat this morning.

Last spring at a meeting of the Ear, Nose and Throat Section of the Southern California Division of the American College of Surgeons, I presented a plan for what I considered to be a much needed transition from teaching the specialty of Otolaryngology as it has by tradition come down to us, to teaching the broader field of "Head and Neck Surgery."

I was appointed by this Division to outline these concepts to the main body of the American College of Surgeons and, last week, very briefly appeared before their Board of Regents for this purpose. In accordance with the mission entrusted to me, I cited the problem but did not enter into a discussion concerning it nor ask for any action; and none was taken.

Great differences of opinion exist among us as to the role we Otolaryngologists should play in the changing pattern. As a matter of fact, at the previously mentioned preliminary hearing before the Board of Regents of the College of Surgeons, one of the Regents read a communication from the Professor of Otolaryngology at his very renowned University, differing radically from my point of view and contending that we did not as a teaching service need to expand into the broader field of head and neck surgery at all, that our destiny lies elsewhere, and that we should grow within the limits of our time-honored sphere of activity without attempting to broaden the base upon which we stand. On the other hand, just a short distance away is another university of equal stature and I have a recent letter from its Professor of Otolaryngology congratulating me upon trying to consolidate the surgery of this area into a single service and describing how it has been accomplished at his school. Thus there is no unanimity of thought amongst ourselves.

I am not one to part easily with tradition, and I highly respect the point of view of those who would continue teaching within the traditional limits of our field, but the fact is that even though we have already greatly expanded within the time-honored limits of our specialty, it is not, as it once was, the most sought after for training in the field of surgery, but the least sought after. I do not think Otolaryngology is a dying specialty at all, but no one can argue that Otolaryngology has not lost its appeal for those graduates who are deciding upon a career in medicine. In looking for the cause we need to be realistic. The reason we have lost our appeal to the new graduate is because we have lost our identity as surgeons and have found no adequate substitute equally appealing. What course of action to remedy this is open to us? One solution, of course, would be for us to throw our hats in the

ring, compete with the other six or seven specialties for the surgery of the head and neck, and thus seek ways and means of survival and teach the specialty of Otolaryngology on the basis of competing with other specialties interested in the surgery of the head and neck. But should we compete? I think not.

I would like to propose a cooperative effort rather than a competitive environment. In order to do so I need to review certain basic aspects of specialization in surgery.

Over many generations it has become established, whether by intent or accident I cannot say, that surgery would divide itself into specialties limited by anatomical structures, and there developed in keeping with this the specialties of urology, the surgery of the bones and joints, the eye, the brain, the thorax, ear, nose and throat, and others. As long as this scheme of things persists and surgery is divided upon anatomical lines, teaching and specialization can be orderly and we can arrive at a logical scheme of things. But there has come upon the horizon complicating factors such as the development of specialties of tumor surgery and plastic surgery which, though worthy in themselves, destroy the concept of an anatomical approach to specialization.

We cannot specialize two ways at the same time. We cannot, on the one hand, create surgical specialties of anatomical divisions of the body and on the other have inroads made upon them by specialists who would, for instance, treat the tumors of the area, or still others who would make further inroads by claiming that the plastic or reconstructive features of surgery fall within a specialized field which is not anatomical. As for plastic surgery as a specialty per se, there is no such thing as surgery without an element of plastic repair. This applies whether the surgery is within the confines of a body cavity such as the thorax or abdomen or within the area of the head and neck.

It is my contention that plastic surgery, tumor surgery of the region, and head and neck surgery are all one and the same. How can they be logically separated and taught as three specialties? How can one operate upon a tumor of the neck without being a plastic surgeon, a tumor surgeon, and a head and neck surgeon all at the same time? How thin can one cut a cake? There must be some limit somewhere. There will never come a time when plastic surgery and surgery of the head and neck can be divorced from each other effectively and taught separately.

If we were to start all over again and there were no surgical specialties, the ideal would be to create a single specialty of head and neck surgery to include everything above the clavicles with the exception probably of the eye and brain. It is still the ideal, but we are not permitted to start all over again and must accept some sort of compromise, men still being jealous of their own prerogatives, which they only seldom are willing to sacrifice for the common good. We, therefore, need to plan our teaching approach to the problem upon the spirit of compromise. First, we will not succeed at all if we follow a policy of exclusion. To create a well rounded teaching program we need to include teachers in fields other than Otolaryngology rather than exclude them. We will not succeed by trying to exclude anyone with a legitimate right to teach or operate in this area.

The type of cooperative effort possible between head and neck and plastic surgery will vary from one teaching institution to the next, but on the whole I believe making the plastic surgeon a part of each head and neck unit is the most likely to succeed. A good deal of spade work in this direction will be nec-

essary, but from my experience I feel certain a closely knit cooperative group can be established in most schools.

I can dismiss in a few words any problems that might arise concerning a division of interests between us and oncologic surgeons by questioning whether this latter form of specialization is desirable. It is my feeling that in a school hospital a service in tumor surgery is not desirable, since operations upon neoplasms should be performed by those specializing in the organ in which they occur. This is in keeping with our long-established policy of specializing in surgery by anatomical divisions rather than by diseases. Specialization in oncologic surgery has not yet been sufficiently widespread to complicate affairs seriously but we need to discourage it from the very outset. Certain highly specialized hospitals may be considered as exceptions.

The general surgeon is a useful member of the teaching team, for without his cooperation conflicting interests would seriously hamper the development of a well rounded teaching program. Actually the general surgeon makes very few claims to the surgery of this area and very few are qualified to do it, but having imagined his field whittled down to irreducible proportions by inroads upon it from a variety of directions, he is especially sensitive to further deflections of surgical cases from his orbit. The interests of the general surgeon in this area are primarily those of the thyroid gland, congenital lesions such as thyroglossal and branchiogenic cysts and esophageal diverticulae. We will never see the day when the general surgeon will willingly relinquish his claim to teach the thyroid gland and the radical neck dissections that accompany it, and yet knowledge of thyroid surgery is an important part of the training of the Head and Neck Surgeon, who will not necessarily want to do thyroid surgery as such, which will probably remain with the general surgeon. However, the gland is so important a part of the surgery of malignancies of the neck, detailed knowledge of its surgery is vital and can best be learned from the general surgical member of the head and neck training team. I think, however, in the instance of the congenital lesions of the neck we have a good argument, since for the most part they arise embryologically from the structures of the pharynx, often remain attached to it and for this reason are part of pharyngeal surgery. We cannot assign the top half of a branchiogenic fistula to the pharyngeal surgeon and the bottom half in the neck to a general surgeon.

Incidentally, the esophageal diverticulum is a lesion we have lost by default and should now attempt to reclaim. What an unreal thing it is arbitrarily to establish the esophageal diverticulum as being in the realm of anyone but the head and neck surgeon (or the Otolaryngologist if one prefers this designation). The pharyngeal muscles comprising the walls of the pharynx (a structure that indisputably falls within our field) and the mucosa of the hypopharynx, that we treat every day of our lives, are the sum total of anatomical elements that comprise the esophageal diverticulum. What logic, therefore, justifies a situation wherein herniation of this mucosal lining through these same pharyngeal muscles takes the pathology out of our field. The herniation takes place into a region of the neck we operate upon all the time. What suddenly happens when the mucosa protrudes through the muscle that takes it out of our surgical realm and places it in that of the general or the thoracic surgeon? We have a good claim to esophageal diverticulae, the logic of the situation being on our side.

There is no problem in the teaching of over-all head and neck surgery inso-

far as the maxillofacial surgeon is concerned, since the dividing line between us is so entirely artificial he would be very glad indeed to join hands with us in the creation of a single teaching service.

When put to the test how does such a plan for the over-all teaching of residents in several specialties, all requiring training in the surgery of the head and neck, work out? At the University of California in Los Angeles and the associated Wadsworth General Hospital of the Veterans Administration, a most cooperative attitude has been adopted by all concerned. At the latter institution a Head and Neck Service such as I have described has been established under Dr. Claude Mumma. It has now been functioning for a year or two. One thing was learned very quickly. It is not possible to compromise the issues at stake. The Head and Neck Service soon lost everything unless it included everything. Any plan of division of cases on a numerical basis very soon resulted in a deflection of all such patients to other services. Any plan whereby the assignment of cases depends upon the whim of an admitting officer or his opinion of what the proper assignment should be results in failure. The admitting officer must routinely admit all cases not obviously pertaining to the thyroid gland or cosmetic repair (except for the ears and nose) to the Head and Neck Service. As soon as he begins to deflect tumors, for instance, into one channel or another according to his own choosing, the scheme of things becomes destroyed.

The Head and Neck Service includes a general surgeon interested in problems pertaining to the tumor surgery of the head, and he plays a cooperative role in the surgery of the tumors. A general surgical resident is assigned to the Head and Neck Service for a period of months. He is taught what we can teach him about examinations of the ear, nose and throat, and their diseases insofar as they concern him.

The rationale of such a plan is that the surgical resident leaving the hospital will have seen head and neck surgery in its broadest phases and will have had the benefits of training in an environment which will include all specialties that together make up the surgery of the head and neck. We are not concerned with what the distribution of cases among the attending surgeons might be so long as the men we are training acquire the maximum benefit from them. This raises another question. Just who are the men we are training and how do we do it on this all-inclusive Head and Neck Service?

We strive to train all who have a legitimate claim upon the surgery of the head and neck. Residents from general surgery who circulate through will have had an intensive course of training in what they need to know about the surgery of the head and neck. They will learn to examine the head thoroughly, including the larynx, sinuses, and ears, and how to use a head-mirror. They will have learned to perform what plastic surgery they need to know in conjunction with this work and will have seen fractures of the jaws treated by the maxillofacial surgeons of the Service, and those phases of ear, nose and throat surgery which are appropriate. These trainees will leave us as far better surgeons of the head and neck than if they had stayed on general surgery to obtain their training in the surgery of this region.

For those who are not going to be general surgeons but prefer the specialty of Head and Neck Surgery (or Ear, Nose and Throat) as a career, a much longer period of training is planned. Over several years their work will include the Home Study Courses of this Academy (which the general surgical residents are not required to take) plus

the surgery of the temporal bone, the interior of the nose, the highly specialized surgery of the sinuses and detailed diagnostic procedures such as hearing and vestibular tests, and all those matters of concern to our specialty as we know it. They will, I hope, become certificated by the Board of Otolaryngology and are bound to be better Otolaryngologists for having come under the influence of the general surgeon, the plastic surgeon, the oral surgeon and the others who comprise the Teaching Service under discussion. Likewise, the plastic surgery resident will be all the better in his field for his association with us, since he will circulate through our service.

I have left a most important concept for last. The surgeon operating upon the head and neck, no matter in which specialty he is qualified, must first know the principles of general surgery. At the University Hospital he will need to come to us out of the surgical resident pool, having been trained in the general principles of surgery before he reaches us. A surgeon in a special field is a surgeon like any other. Skill in a specialty is not a substitute for basic surgical knowledge but only an adjunct to it. I am most certainly in accord with the plastic surgeons, who especially criticize us because our requirements do not include training in general surgery. Based upon the experiences of my trial run, I feel that if we apply these principles and provide graduates with a teaching program including the broader aspects of head and neck surgery instead of the narrower aspects of ear, nose and throat, most of our problems will be solved.

I believe by virtue of the very change of name of our service from "Ear, Nose and Throat" to "Head and Neck," this alone as time goes on will do more to direct surgical cases to us than any arguments we could put forth. A tremendous reversal of psychology takes place. To send a neck tumor to an Ear, Nose and Throat Service requires a good deal of conditioning and the overcoming of psychological resistance, but to assign it to a Head and Neck Service is the most natural thing in the world. Names are mighty important things, and I think we need to modernize ours in keeping with the ever changing times. That this will find no sympathy among the vast majority of my fellow specialists can be taken for granted.

At UCLA we are going to try a six-year training service. The first will be the internship, and then will follow two years in General Surgery. The fourth and fifth years will be on the Head, Neck and Plastic Service, in which much of the routine work will be that of ordinary Otolaryngology but on the broad base that I have described. During this time all residents on the service will take the basic work contained in the Home Study Courses of the American Academy. At the end of the fifth year those desiring to become Otolaryngologists and to qualify for the certificate of the American Board of Otolaryngology will be given an extra year of training in such things as the detailed surgery of the temporal bone, performing whatever temporal bone surgery is done in the hospital, endoscopy, the specialized treatment of the allergies and whatever else seems necessary to round him out as an Otolaryngologist.

At the end of the fifth year those desiring to specialize in Plastic Surgery will return to the General Surgical Service for a specialized year in that portion of Plastic Surgery which has not yet been given them. It is hoped that the Plastic Surgery Board will consider their training broad enough to be certified in that field.

Still others who have taken the five years of training may want to be certified in General Surgery, and it seems

likely that having had two years in General Surgery and two in Head and Neck, that Board will consider them eligible for certification at the end of the fifth year. If not, they too will return to General Surgery for the sixth year.

Thus, in an integrated teaching program, everyone concerned, General Surgeons, Plastic Surgeons and Otolaryngologists, will cover every aspect of their training under the supervision of those best qualified to teach it to them and have the advantage of seeing and working with all the cases in the hospital instead of just those which can be stolen from other services.

In evaluating this, it must be borne in mind that the plan of integration is not for the ordinary non-teaching hospital or because I feel that many specialties need necessarily to be encompassed into one. This is a mechanism for teaching, and as such it seems to me to have great merit. I am happy that through the cooperation of Dr. William Longmire, Chairman of our Department of Surgery, and other members of the Department as well, I have been in a position to give it a trial at UCLA. It would be ridiculous to attempt such a program if complete cooperation and the good will of everyone concerned could not be taken for granted.

DISCUSSION

JOHN E. BORDLEY, M.D. (Baltimore, Md.): Dr. Boies, Members of the Academy and Guests: About three weeks ago Dr. Alfred Blalock came to me and asked if he might discuss changes that were being proposed to the American College of Surgeons concerning the transition of otolaryngology into head and neck surgery.

The change over, as he explained it to me, was to be in three stages. First, there was to be a coalescence of our present teaching staffs, which included general surgery, pathology, otolaryngology, oncology, endoscopy, plastic surgery, maxillofacial surgery and oral surgery; that this grouping of the staff would then undertake a six-year residency service.

The first two years were to be devoted to general surgery. Following this there was to be one year of pathology, and the last three years were to be devoted to the six specialties that I have just named.

It was my understanding that this was incorporated in a letter that was sent to him by Dr. Pressman. After some thought, I wrote a letter to Dr. Blalock which, with your permission, I feel should be read before this body.

Dear Dr. Blalock:

I have been thinking over our discussion of yesterday concerning proposed changes in our present teaching in the surgical specialties. It is indeed time to review the current concepts of these surgical specialties. Conflicts have arisen between them in many institutions concerning the proper delineation of each specialty. Such conflicts have been intensified since the advent of the antibiotics.

The modern trend towards specialization was fathered at the Johns Hopkins by Dr. Halsted when he gave Dr. Howard Kelly, Dr. Harvey Cushing, Dr. Hugh Young and Dr. Samuel Crowe their divisions. The reason for this was not so much to increase the manual skill in that field but, rather, to give a man with an inquiring mind a chance to study basic physiology and pathology in a particular field.

Through this intellectual approach, great strides have been made in our knowledge in these specialties. The surgical techniques that have been developed are secondary to the research that preceded them.

The idea of consolidating the surgical specialties that have been of the neck, as the common meeting ground, into a general specialty of the head and neck may have some advantages. However, some of these advantages are more apparent than real.

Before making such a step, before creating another self-perpetuating, self-educating specialty, let us analyze it. By combining our present teaching staffs in the field of general surgery, plastic surgery, otolaryngology, oncology, maxillofacial surgery, oral surgery,

endoscopy and pathology, we can in six years turn out some good surgeons. As has been suggested, they can have two years of general surgery, one year of pathology and six months each in the six specialties to be combined into surgery of the head and neck. Six months seems too little time to learn enough about otolaryngology when one considers the intricacies of the temporal bone, the sinuses, the throat, the larynx and their neighboring structures. I hardly think there would be much time left over from the surgical training to devote to the problems of, say, deafness or to the techniques of clinical diagnosis in otolaryngology which, for the most part, are more medical than surgical.

I speak only of my field. Perhaps the oncologist, the maxillofacial surgeon, and the plastic surgeon would feel six months was sufficient to qualify a man in his field.

A second step is to be taken when these new specialists have finished their education at the hands of the combined present teaching staff. This consists of having the trainees of head and neck surgery take over the teaching load in their new specialty. One wonders what chance men with such truncated internships will have of making intellectual advances in this new teaching field. How can such people hope to advance the teaching of diagnostic techniques or experimental physiology in all of these divergent subjects? If such teachers do become interested in research in the separate branches, such as plastic surgery, otolaryngology, or oncology, in order to broaden their knowledge, the specialty of head and neck surgery will break down once again into its original component divisions. Unfortunately, however, these men will lack the general, over-all basic knowledge that our present teachers of these subjects have acquired.

Finally, there is to be an examining board set up to qualify men in head and neck surgery. This board is to gradually absorb the functions of the other boards in this field. Such a super-board will have to dilute the qualifications of the existing boards. The candidates will not have had the opportunity to acquire the knowledge presently required in these specialties because of the short term allotted to each one of them.

There are serious problems facing our specialty. The least of these is the decrease in surgery secondary to pyogenic infection. As a specialty, we have overspecialized. In many cases we have divorced ourselves from the rest of the teaching institution, having our own beds, our own operating suites and laboratories and even our own dining rooms. In many institutions, such a sharp line has been drawn between specialty divisions that there is really very little interchange of ideas.

We talk of a shortage of young men applying for internships in Otolaryngology, yet our Boards have made it impossible for young men drafted into the Medical Corps after one year's internship to be promoted if they elect to take Otolaryngology while in the Armed Forces unless they are certified. This almost forces them into the field of Surgery or Medicine, where after two or three years in the service they are very loathe to go back and begin all over again in Otolaryngology.

The Board approval of hospitals has been spread so thin that even a large increase in the candidates for training would not fill the present vacancies. We have been defeatist in our attitude. We have even countenanced editorials in our medical journals describing otolaryngology as a dying specialty. We have failed to tell the world but, more especially, the young medical students of the exciting new research being carried out in the physiology of hearing. We have not publicized sufficiently the important advances in temporal bone and laryngeal work. All too few are familiar with the new science of audiology born since the war, which offers untold opportunities in research and rehabilitation.

It would seem, perhaps, a better plan to consider the absorption of such specialties as maxillofacial surgery and endoscopy into otolaryngology where they seem rightfully to belong and where such consolidation would eliminate duplication of services now extant in many of our institutions.

As for the other specialties, let us return to the original idea of the university where knowledge is made available to all. Pooling our knowledge, working together at the operating table on cases of common interest, freely exchanging ideas would better help the patient and would broaden our knowledge. If this spirit can be engendered, there would be no real conflict of where a specialty begins and where it ends.

Should these specialties be combined, might we not forget their intellectual aspects in the crowded routine of mastering their multiple manual technics?

G. O'NEIL PROUD, M.D. (Kansas City, Kan.): I should like to say a few words about the specific problem of rhinoplasty and otolaryngology. I feel

that rhinoplasty is already a part of our specialty in some quarters. Before many of us can assume this new load, however, we must be equipped to do the job properly. Many of us were not so trained during our houseship.

There are a few thousand Otolaryngologists who are interested in learning rhinoplastic surgery. These men have already finished their formal training. How could we best train these men to do this new task? How should our younger men be trained? Naturally there will be some resistance from the plastic surgery departments in many institutions.

The various chiefs of plastic surgery services throughout the country all say, "Before other surgeons can do other jobs, first they must have training in general surgery." Shall we then advise our younger men to undertake such a program of training before specializing in Otolaryngology?

DR. LEDERER: Gentlemen, may I get back to the subject at hand? Dr. Pressman's presentation is a throw-back to the dark ages. I believe that with an experienced, modern Otolaryngologist, this should not have been a process begun one year ago.

Before various organizations of specialists, Joseph Beck many years ago talked about what he considered then "borderlines" in Otolaryngology. This plan set forth by Dr. Pressman may be a plan to make friends and influence people, but it is very poor policy for a specialty that has held itself and its standards so high to deal, as it were, with the enemy and, for the sake of making peace, give everything and get nothing in return.

Our specialty has been through what Dr. Pressman tells about. History begins to repeat itself. In the thirteenth century, the people of the long (the surgeons) and the short (the barbers) robes fought it out. We would be very reluctant about going before the American College of Surgeons as individuals. We would rather take this as not one individual's feeling and opinion but go as representing ourselves from the body (such as the Academy) that really is interested in the future of Otolaryngology.

There are men in this organization who have long been identified with the disciplines that we today would consider broadening our horizons. There are others who give further lip service to this idea that antibiotics create this particular situation of a restricted practice in which many of you may find yourselves engulfed.

I do not see any change in Otolaryngology. I see it only as in all other fields, that we have been improving ourselves. We have not widened our horizons; we have improved technics of practice. Our forebears did a great many things to improve our lot. Certainly, if you want to be reminded of your insignificance, think of the history of Otolaryngology and what the men before us contributed. Today we seem to be totally in ignorance of their contributions. What is in the name? What good will it do you to change the name of the specialty?

As far as name is concerned, there is the old aphorism, "By your deeds shall ye be known." Let us do good work. Otolaryngology represents all these things that Dr. Pressman said. If anybody feels the pinch, it is the general surgeon who feels it. He has been on the carpet for his too plentiful appendectomies. He has been on the carpet because today the incidence of thyroid surgery is being lessened. He feels the pinch more than we do. We who have been educated in the broad aspects of Otolaryngology find no difference in the challenging disease states today than in yesteryear.

I would say this: I would recommend for Dr. Pressman and people who are

having troubles of a like nature, that they review this situation in the light that general surgery too is having its difficulties, but that, when they deal with these people in charge of surgical departments, it is frequently a matter of personalities. Who is the head of general surgery in your school? Is he one of those bigoted individuals who has not moved, who has not seen the total picture as it develops? Is he one of those fellows who has not heeded the thought of Wangensteen, who said, "Thank God, the day of the general surgeon who thinks he can do all is past"? Is he the type of fellow who is unwilling to yield under official circumstances and therefore you consider what the future of Otolaryngology is at a cocktail party, compromising, that you should yield? Never!

Progress will not be made by putting Otolaryngology in or under a department of general surgery again. Too many institutions feel the pinch of being under general surgical departments. I would say, certainly, how to live in a world and continue the progress is not so much as the plan of going to the general surgeon and saying meekly, "Would you let us do something?" Have members of your department capably trained, skilled and experienced, and no department of general surgery would have any objection to your carrying out a broad program of Otolaryngology, whether it is a thyroglossal cyst, neck resection, or faciomaxillary repair.

HARRIS P. MOSHER, M.D. (Marblehead, Mass.): Mr. Chairman and Members of the Section: I think I can come to the point quicker than the last speaker and with less rhetoric. I agree heartily with Dr. Pressman.

CHAIRMAN BOIES: If we didn't have differences of opinion there would be no purpose in coming here at ten o'clock on Sunday morning. Would anyone else like to discuss Dr. Pressman's paper?

D. A. CORGILL, M.D. (McKinney, Texas): I have a report of progress with regard to Dr. Pressman's paper: The McKinney Veterans Hospital is one of the tumor centers of the Veterans Administration. The Department of Otolaryngology does the head and neck surgery with the exception of parotid, floor of mouth and anterior tongue, and lip. Five years ago the chief of surgery was amazed to find that his new chief of Otolaryngology contended that the head and neck cancer surgery should be assigned to his department. Immediate resignation was offered, and the opportunity to demonstrate competency was gained. Last year, having something to say, I ably demonstrated I could not say it well at this meeting. It was better said for me by our chief of surgery in his last annual residents' training report, and I quote:

> The elimination of many of the once familiar Otolaryngologic infections by the antibiotics has led some to conclude that Otolaryngology is doomed as a specialty. The section in this hospital demonstrated that this need not be true. Under enthusiastic leadership and based upon a sound foundation in good surgical principles, the field can be expanded into previously untouched areas . . . . In this hospital a concerted effort has been made to help patients with advanced malignancies of the pharynx, larynx, and neck. This is a complicated problem requiring a group attack. Radiotherapy has its place, but past experience indicates that it cannot meet all the needs of these patients, either for eradication of their cancer or relief from pain. Close cooperation between the radiologist and the surgeon is essential . . . . The surgical procedures involved are formidable . . . . Postoperative management of these cases demands of the Otolaryngologist a high degree of familiarity with the problems of food and electrolyte balance, of nutrition, of soft tissue infection, and of pulmonary complications. Many of these patients must be tube fed for long periods, and the dietetics division becomes a valuable ally . . . . [With reference to specialists and their conflicts with

regard to their overlapping fields] We have no wish to get involved in these often acrimonious discussions but would hazard the suggestion that absolute rules should rarely be laid down to limiting the scope of overlapping specialists. Situations and available personnel vary from hospital to hospital. It seems sensible to assign patients to whatever doctor is most interested in them and will do the most for them regardless of the specialist label he may bear.

I think Dr. Lederer's comment a few minutes ago is most appropriate. He said, "By your deeds shall ye be known." If we are to do the head and neck surgery, let us be the most interested and be able to do the most for these unfortunate patients.

At present the chief of surgery and I are considering the problems and the wisdom of assigning residents who are interested in Otolaryngology to a year of general surgery; however, their training will be delineated and supervised by the chief of Otolaryngology. In other words, they won't be scrubbing on orthopedics, appendices, etc., but will be learning surgical pathology, electrolyte balance, basic surgical principles, etc.

JAMES H. MAXWELL, M.D. (Ann Arbor, Mich.): Dr. Boies and Gentlemen: I would like to call to your attention the fact that we should not forget two things. First, we are Otolaryngologists and we are teachers and our main job is undergraduate teaching. I wonder if departmental autonomy would be possible under Dr. Pressman's suggestion.

DEAN M. LIERLE, M.D. (Iowa City, Iowa): I wonder if we actually understood Dr. Pressman's approach. It seems to me that we do not want to lose our identity as Otolaryngologists, and that a plan might be used whereby we have the assistance of men trained in special fields to help us out at the present time. Some of us have not had training in these special fields and therefore are not capable of teaching them. We have two alternatives: one to train our own teachers or to ask the general surgeon to help us.

Another thing I want to say is this: people who are trained in this broad field do not necessarily have to do tumor surgery, plastic surgery or fenestration surgery but they should have basic information concerning these subjects. In other words, three years should expose them to all these various specialties. That doesn't necessarily mean that they become specialists in these fields without further training.

CHAIRMAN BOIES: Dr. Pressman, will you close?

DR. PRESSMAN: I am more than grateful to have had the support of Dr. Mosher who, having contributed more to the teaching of our specialty than any of us except possibly Dr. George Coates, sees fit to share my point of view.

I think we came here for the purpose of hearing opinions expressed by leaders and teachers in our field. That these opinions diverge from each other is healthy and the fact that we can express them so freely is one reason why we are all such very good friends.

I object to Dr. Bordley's point of dividing the period of training into a period of months. Six months is by no means enough to learn the surgery of the temporal bone, but we do not propose that surgery of the temporal bone should be learned in six months. We propose that surgery of the head and neck shall be learned in six years.

To break things down in the fashion that Dr. Bordley did would be like taking the diseases the general surgeon treats, dividing them into time intervals

and saying three days is not enough to learn to do an appendectomy. I would heartily agree.

I think Dr. Lederer's arguments would be entirely correct if surgery were static, but the progress of surgery is not static. In the days of Dr. Beck we were not doing mandiblectomies and resections of the neck and floor of the mouth. These things were virtually unknown. We have to modify our thinking in keeping with these changes. By what method shall we reconstruct the plastic contours of the structures that we have removed if we do not master the principles of plastic surgery? And where can we better learn the principles of plastic surgery than from the plastic surgeons themselves? As of today the principles of plastic surgery of the head are best known and best taught by the Plastic Surgeon. I see nothing wrong in producing a trainee who has learned each of the principles of surgery I have mentioned from those who are best able to teach them. I think for an Otolaryngologist or head and neck surgeon to learn the principles of plastic surgery from a plastic surgeon is logical, and to learn all the other phases of surgery of the head and neck from the ones who know them best is not relegating ourselves to the thirteenth century but looking forward into the future. So do I think the plastic surgeon who is going to work in the region of the head and neck needs to be taught the principles of otolaryngological surgery from us. Therefore, I believe a teaching service which includes representatives of plastic surgery, oral surgery, general surgery, and ourselves as Otolaryngologists can produce a surgeon better able to operate on the head and neck than can any one of us alone.

I think we need more time before we are ready to march forth in the manner I have proposed. Our thinking is not yet such that we are ready to embark upon so far reaching a venture as I have suggested. But let us not forget one thing: Who is feeling the pinch? When I walk into a hospital, into your hospital, if you like, I will find the general surgeon with residents at his beck and call and interns taking his histories, scrubbing on his surgery, making rounds, and the chances are pretty good that I will find most of the Otolaryngologists taking their own histories and looking pretty hard for someone to scrub and to assist them. Obviously something is wrong. We are not offering an attractive program to the recent graduate. Complacency and isolation are not the answers. We must find some answer. Going back to the thirteenth century is not the answer. Continuing as we have been doing is not the answer. Providing audiology is not the answer. I doubt very much whether we will ever see Otolaryngology in the place it has occupied for the past hundred years until the field of surgery that we encompass increases considerably and the training we provide shall enable our men to compete on equal footing with all the others whose surgical interests carry them into the area of the head and neck.

CHAIRMAN BOIES: Dr. Hoople, will you announce the result of your poll?

DR. HOOPLE: Maybe we should not have had this questionnaire today because we do not know what we are asking our boys to go into. However, I think that for the next year or two we will have otolaryngologic residents.

There were 108 questionnaires answered, and the ballot said that somewhere in the nature of 55 men were influenced to study Otolaryngology. I say "somewhere in the neighborhood" because in the last ballot or one of the last ballots we had in order was one that said, "Many." I congratulate the man that influenced many. There were

37 who said they influenced some man or men to study Otolaryngology.

Nineteen of those influenced one and 16 influenced one or more. Because of the natural attrition that comes from those who undertake any long-term educational course, 54 or 55 men are not enough from a body as large and as influential as this. It is a good start, but I think this questionnaire has pointed out that we who are the leaders in the field are not doing quite as good a job as we should.

Seventy-one admitted they had not influenced anybody this last year to study Otolaryngology. If you find yourself in this class, I suggest that you do something about it.

CHAIRMAN BOIES: This Teachers' Section for Otolaryngology in its revived setup has now been in existence for four years. We had our first program in 1950. Many of you are not aware of the fact that the Teachers' Section existed long before that. I thought it would be interesting to have someone comment on the activities of the Teachers' Section from 1931 to 1942. I have asked Dr. Harry Schenck to do this.

Comments on the Activities of the Teachers' Section from 1931 to 1942

HARRY P. SCHENCK, M.D.
PHILADELPHIA, PA.

Although the Teachers' Section was organized in 1931, the actual movement for an organization to revise and improve graduate teaching began in 1927. It was then that Dr. Duncan Macpherson of New York City, becoming alarmed at the discrepancies and inadequacies of graduate medical education in Otolaryngology, and aware of the weaknesses of a lone agitator, arranged by telephone to meet with Dr. George M. Coates in Philadelphia. Dr. Clarence Smith of New York accompanied Dr. Macpherson to Philadelphia, and this meeting resulted in the formation of the "Teachers' Club for Postgraduate Education in Otorhinolaryngology," with Dr. Duncan Macpherson, president; Dr. George M. Coates, vice-president; and Dr. Clarence Smith, secretary. There were no dues and the subsequent luncheon meetings were financed by Dr. Macpherson. Doctors Lewis Coffin, Thomas Carmody, Hill Hastings, Ross Hall Skillern, George Shambaugh and others soon became affiliated with this pioneer group. The members appreciated Dr. Macpherson's generosity in financing the luncheon meetings but three years later insisted upon sharing the expenses of the movement. The organization proved of immediate value in serving as a forum for the interchange of ideas and experience and acquired prestige among those interested in the graduate teaching of Otolaryngology.

In 1929, Dr. Samuel J. Kopetzky of New York learned of the existence of the "Club" and with the enthusiasm and drive of the convert, appeared to take over the young organization "lock, stock and barrel." The pioneers did not regard Dr. Kopetzky as experienced in postgraduate teaching and there was some objection to the intrusion. Undaunted by the tepid reception, Dr. Kopetzky then conferred with Dr. William P. Wherry, suggesting the formation of a Teachers' Section in the Academy, the publication of its deliberations in the TRANSACTIONS, and an initial program to be presented by the Teachers' Club for Postgraduate Education in Otorhinolaryngology.

Early in 1931, Dr. Wherry, who had considerable political acumen and was a superb administrator, decided that the ideals and objectives of the "Club" deserved Academy support. The Annual

Meeting of the Academy at French Lick, Indiana, in September of that year, gave him the opportunity for launching a definite plan. He induced the President, Dr. John F. Barnhill, to include in his Presidential Address the statement that "there is a forward looking movement which should interest every teacher and should result in better instruction and better standards. A period has, therefore, been set aside for discussion of the problems of both undergraduate and postgraduate teaching." Dr. Wherry then delivered a carefully constructed address in which he pointed out that the Council had been instructed to organize a Teachers' Section and submit the proposal to the membership for deliberation. He offered an outline for discussion, out of which the petition to the Council could be formulated. His plan of organization included the division of the Section into Subsections: (A) Graduate Ophthalmology, (B) Graduate Otolaryngology, (C) Undergraduate Ophthalmology, (D) Undergraduate Otolaryngology.

He suggested that an Executive Committee of five be appointed by the Council for a variable number of years, from one to five, and that, thereafter, one Fellow be elected each year to replace the Fellow retiring; that the first four years be served as leader of the Subsection from which he comes, and his fifth year of office be as General Chairman; that the General Chairman become ex-officio member of the Program Committee of the Academy and that the Executive Secretary of the Academy be the Secretary Ex-Officio of the Section. Members were to be elected to the Section from those Fellows of the Academy holding positions in acceptable graduate and undergraduate schools, and those conducting residencies in Ophthalmology and Otolaryngology acceptable to the Section.

A program of activities was presented by Dr. Wherry. Commissions were to be appointed to gather information from various universities and from those engaged in teaching. He suggested that each Subsection meet separately to discuss its own problems and then have a joint meeting at the end of each annual session, following an annual dinner. The immediate formation of the following commissions was suggested: Undergraduate Curriculum in Ophthalmology, Undergraduate Curriculum in Otolaryngology, Survey of Basic Sciences in Ophthalmology and Otolaryngology, Statistical Study of Clinical Work in Teaching Hospitals, Minimum Graduate Curriculum in Ophthalmology, Minimum Graduate Curriculum in Otolaryngology, Minimum Curriculum for Residencies in Ophthalmology, Minimum Curriculum for Residencies in Otolaryngology, and Comparative Studies of Graduate Courses in America and Abroad.

Dr. Duncan Macpherson then described the "Problems of Graduate Teaching," deploring the fact that at that moment there was not a single institution in the world capable of carrying on postgraduate teaching in Otolaryngology. He pointed out that Europe had failed to give satisfaction to those attempting to further their studies. Intern training in Otolaryngology was especially stressed but he felt that reform should begin in the undergraduate schools. The graduate schools of this country were inferior because they lacked inspection by a disinterested authority, there was no law compelling them to deliver the courses they advertised, there existed no central bureau to provide prospective students with reliable information concerning competing schools and there was a paucity of qualified teachers and a complete absence of full-time teachers. He advised that the graduate schools should be in-

spected by men appointed by the national societies, and strongly condemned "brush up courses" of three to six weeks which sent out general practitioners as specialists. In conclusion, it was pointed out "the departments of graduate and undergraduate medicine should be entirely separate, the one from the other. Graduate teaching is in itself a specialty."

Dr. Kopetzky then outlined his activities as a member of the Executive Committee on Medical Education of the New York Academy of Medicine but pointed out that he had never engaged in graduate teaching. A lively discussion followed in which Doctors Burt Shurly, Joseph C. Beck, Martin Cohen, Perry Goldsmith and Frank Spencer took part. Dr. Perry Goldsmith stated, "I was very glad to hear Dr. Kopetzky say that he has revolutionized the teaching of Otolaryngology in New York. Lord knows it was needed." He then outlined the system of undergraduate teaching in Otolaryngology in Toronto.

In 1932, the Teachers' Section had become an integral part of the activities of the Academy. Dr. C. F. Martin, Dean, School of Medicine, McGill University, discussed the "Modern Trend of Undergraduate Teaching." Unfortunately, the officers of the Section had not informed the Dean concerning the main objectives of the meeting. He, therefore, had prepared a rather general consideration of undergraduate teaching. In order to conform with the program, which he had not seen previously, he terminated his address with extemporaneous remarks on specialty training. Emphasis was placed on the fact that undergraduates should be trained for general practice. The Dean felt that "some men with certain opportunities could give all the instruction that would be required in twenty hours; others could not do it in a hundred hours."

A "Survey of Undergraduate Ophthalmology" was then presented by Dr. Harry S. Gradle. This was based on a questionnaire sent to sixty Class A medical schools. It appeared from this survey that Ophthalmology in medical schools was largely operated for the instruction and aggrandizement of the chief of staff and his assistants and not for instruction of students. Current teaching consisted of endeavors to show the student the unusual rather than the ordinary everyday occurrences that they would meet after leaving school. Three important recommendations were made: (1) there must be an adequate number of hours for teaching undergraduate Ophthalmology, (2) the department of Ophthalmology must be an autonomous department, (3) all instructors in Class A medical schools must be certified by the American Board.

Dr. Ralph A. Fenton then presented a "Survey of Undergraduate Otolaryngology." Questionnaires had been sent to 84 schools and replies had been received from 28. On the basis of these replies, he advised an independent status and an independent budget for undergraduate Otolaryngology; preliminary courses in anatomy and physiology should be supplemented by lectures by the Chief of Otolaryngology in the first and second years; at least 70 hours of instruction in Otolaryngology; the omission of teaching of operative technic; the teaching of the normal before the teaching of the abnormal; discontinuing the encouragement of research among undergraduates except in special cases and then only at the discretion of the research council of the institution; all instructors should be Board certified; elective courses should be encouraged; maximum use of films, lantern slides and microscopic projections should be encouraged.

The discussions which followed were confined largely to undergraduate teaching, but the speakers agreed that the case method of teaching was far superior to the lecture method. It was pointed out that statements in bulletins of Class A medical schools did not represent the amount or quality of practical knowledge the student actually acquires, but expressed ideals rather than attainment. There was general agreement with the view that research had no appropriate place in the overcrowded curriculum of the undergraduate. Perry Goldsmith said, "Teaching of undergraduates does not depend on fine buildings, fine libraries, or redundance of equipment. It depends largely upon the inspiration the teacher is able to inculcate in the student in preparing him to continue studying after graduation."

Dr. S. J. Kopetzky then presented the "Development of Postgraduate Teaching," based upon the information obtained by questionnaire. Two types of postgraduate instruction appeared to need support. First, there was need of further education of the general practitioner; second, it was desirable to further the complete development of specialists and not mere technicians.

This session closed with the unanimous vote to support Dr. Wherry's motion that the President and President Elect appoint a Postgraduate Committee empowering them to develop a standard procedure and to report at the next annual meeting.

By 1933, the initial enthusiasms had cooled, many reforms had been brought about both in the undergraduate and postgraduate schools, and most of the original objectives had been gained. While the Teachers' Section met, the papers were not published in the TRANSACTIONS. The program contained the following papers: Analysis of the Undergraduate Questionnaire in Ophthalmology, Analysis of Undergraduate Questionnaire in Otolaryngology, Analysis of Responses from Graduates, Analysis of Postgraduate Questionnaire in Ophthalmology, Analysis of Postgraduate Questionnaire in Otolaryngology.

Motions were passed to continue the Committee on Undergraduate Instruction and the Committee on Graduate Instruction. It was decided that it was the responsibility of the Council whether or not the Teachers' Section Committee should be continued. This was an ominous note and foreshadowed the gradual decline of the Section. In a sense, the group was strangled by success; there seemed to be no worlds to conquer.

Further deterioration was evident in the 1934 meeting, which was a dinner meeting with no formal papers and only informal discussions. Chairman Kopetzky pointed out that the Council on Medical Education of the American Medical Association had largely taken over the functions for which the Section was organized and possessed superior facilities for the implementation of the programs originated by the Section. Dr. A. D. Ruedemann was elected Chairman of the Teachers' Section, with Dr. George M. Coates, Associate Chairman, and Dr. Ralph A. Fenton, Secretary. Eleven directors were elected.

Multiple aims and diffusion of effort seemed to characterize the Section meeting held during the Annual Meeting of the Academy in Cincinnati in 1935. The Section was called to order at 8:30 p.m. and adjourned at 10:15 p.m. Dr. Wells P. Eagleton, President of the Academy, opened the discussion. The program was as follows: "Report of Questionnaire on Postgraduate and Graduate Education in Otolaryngology and Ophthalmology," Dr. Ralph A. Fenton; "Deficiencies in Training in Anatomy and Pathology in Ophthalmology and Otolaryngology," Drs. Bernard

Samuels, Edward Burchell, Joseph C. Beck; "Proposed Central Laboratory for Otolaryngology," Dr. Frank Novak; "Existing and Proposed Libraries for Ophthalmology and Otolaryngology," Dr. Burt R. Shurly; "The Army Medical Museum and the Academy," Major Raymond O. Dart, Curator, Army Medical Museum; "Teaching Problems in Vienna," Dr. Hans Brunner.

The meeting of the Teachers' Section in 1936 was held at the Waldorf-Astoria, New York, and was called to order by the Chairman, Dr. Lee W. Dean, at 8:00 p.m. and adjourned at 10:15 p.m. The program consisted of a panel discussion on "Graduate Education" and the following papers were presented: "The Present Situation in the Medical Schools Regulating Graduate Instruction," Dr. Willard Cole Rappleye; "Shall a Nine Months' Course in the Basic Sciences of Otolaryngology Be Required?" Dr. Ralph A. Fenton; "The Amount of Training in the Basic Sciences of Otolaryngology That Each Intern Must Receive," Dr. Dean M. Lierle; "Shall a Nine Months' Course in the Basic Sciences of Ophthalmology Be Required?" Dr. C. S. O'Brien; "The Amount of Training in the Basic Sciences That Each Intern Must Receive," Dr. Harry S. Gradle; "The Educational Standard of Otolaryngology That Must Be Met at This Time," Dr. Harris P. Mosher; "The Educational Standard of Ophthalmology That Must Be Met at This Time," Dr. Walter B. Lancaster. Dr. W. D. Cutter, Secretary of the Council on Medical Education of the American Medical Association, made the final presentation on the subject of "Graduate Medical Education."

While the program appeared in the TRANSACTIONS, none of the papers were published. Subsequent meetings, until the Teachers' Section was discontinued in 1942, failed to appear in the TRANSACTIONS and even the programs were not recorded. The meeting in 1936 was well attended and the program timely; the Section seemed to have regained considerable vitality. Its future usefulness appeared to be assured. And yet, in 1937 there was no meeting of the Section.

In the Address of the President of the Academy, Dr. Lee W. Dean made a gallant attempt to resuscitate interest in the Section although no Section meeting was held in that year (1937). Dr. Dean's address was entitled "Graduate Teaching." He pointed out that the Teachers' Section of the Academy and the two examining boards (Ophthalmology and Otolaryngology) were the agencies having the greatest influence in molding the graduate teaching of our specialty. Adding years of study, he felt, would not make a good specialist out of one who lacked the requisite mental equipment. Natural ability, a desire to make progress, and honesty were the three most desirable traits; good specialists could be made during two years of graduate training.

Dr. Dean stated that graduate teaching in Ophthalmology and Otolaryngology was being done better than in any other specialty. In retrospect, he found that from 1890 to 1900 there was great difficulty in obtaining training in the basic sciences, and although there was more opportunity for clinical work, this was largely available only in the clinics of New York City, Philadelphia and Europe.

Informal dinner meetings were held in 1938, 1939, 1940 and 1941, but neither programs nor papers were recorded in the TRANSACTIONS. In the Council Minutes of Tuesday, October 13, 1942, the following entry appears:

"The Executive Secretary advised discontinuing the Teachers' Section because the functions of this Section, as

carried on in the past, have largely been taken over by other committees." Immediately following this, there appears the entry, "Committee on War Activities established."

It may be well to emphasize that this Section was the first group to be solely dedicated to the interchange of ideas and experience in the teaching of Ophthalmology and Otolaryngology. The initial unprecedented success of the Section actually resulted in its deterioration; as objectives were gained and reforms instituted, the zeal of the original members waned. The scheduling of well organized and well prepared programs became a thing of the past and informal dinner meetings failed to inspire enthusiasm. I feel that the failure of the Academy to continue to include reports of the meetings of this Section was an important factor in the temporary demise of the Section, although the onset of World War II also played a role.

The Section had accomplished much during this decade. For the first time, specifications of standards for both undergraduate and postgraduate teaching of Ophthalmology and Otolaryngology were formulated. This resulted in reform in the institutions engaged in such teaching. The activities of the Section resulted in effecting actual inspection of teaching institutions and the eventual publication of the accumulated data in the Journal of the American Medical Association. For the first time, prospective students had access to reliable information concerning the curricula of competing institutions.

That the Section was again reorganized is evidence that other committees of the Academy were unable to take over its functions.

CHAIRMAN BOIES: Thank you, Dr. Schenck. I felt that you were not quite sure at first of my purpose in asking you to do this. I believe that your inquiry into the past efforts of the Academy to study and improve the teaching of our specialty may well have given us some ideas about the future of this Teachers' Section.

I believe that this Teachers' Section is going to continue permanently with an important function. I have now been your Chairman, as an Academy appointment, for four years. I have asked the Council at this meeting to select a new Chairman and I will suggest to him that he choose an entirely new Committee as a means of bringing more of you actively into this work.

I am indebted to all of you who have participated in these meetings in the past four years. Everyone of you who has been asked to do some work has responded and given me 100 per cent cooperation. Thank you very much.

News - - - Notes

AMERICAN COLLEGE OF SURGEONS

The Ophthalmology Sessions of the Clinical Congress of the American College of Surgeons will be held in the Renaissance Room of the Ambassador Hotel, Atlantic City, in the afternoons, Tuesday through Thursday, November 16 to 18, 1954.

On Tuesday afternoon there will be a panel discussion on "Surgical Management of Diseases of the Cornea," with Dr. Rudolf Aebli of New York as moderator. Other members of the panel will be Dr. William B. Clarke, New Orleans; Dr. Herbert M. Katzin, New York; Dr. Brendan D. Leahey, Lowell, Mass.; and Dr. R. Townley Paton, New York.

The panel discussion on Wednesday will deal with "Minor Surgical Problems of the Eye and Adnexae." The moderator will be Dr. Robison D. Harley of Atlantic City, and his collaborators will be Dr. Irving H. Leopold, Philadelphia; Dr. Homer R. Mather, Jr., Latrobe, Pa.; and Dr. John M. McLean, New York.

The Thursday discussion will deal with "Selection of Operative Technic in Retinal Separation." The panel will consist of Dr. Harold G. Scheie, Philadelphia, moderator; Dr. Paul A. Chandler, Boston; Dr. John W. Henderson, Rochester, Minn.; and Dr. William F. Hughes, Jr., Chicago.

On each evening from 8 until 10 o'clock a symposium on motion pictures in ophthalmology will be conducted with personal narration from the authors.

A cordial invitation has been extended to the Academy to attend a Sectional Meeting of the American College of Surgeons in Cleveland, Ohio, February 21 to 24, 1955.

Surgical clinics in ophthalmology will be conducted at Lakeside Hospital on February 22 and at the Cleveland Clinic on February 23. Clinics in otolaryngology are to be presented at the City Hospital, St. Luke's Hospital, the Cleveland Clinic and Cleveland Speech and Hearing Center on the mornings of February 23 and 24.

Didactic programs in ophthalmology will be presented at the Hotel Cleveland in the afternoons of February 22 and 23 and in otolaryngology on the afternoon of February 23.

Dr. Lorand V. Johnson is chairman of the committee arranging the program in ophthalmology, and the program in otolaryngology is under the chairmanship of Dr. F. W. Dixon. Evening attractions have been scheduled by the Cleveland Otolaryngological and Ophthalmological Clubs.

Hotel accommodations may be obtained by writing to Mr. Elmore C. Bacon, Director of Sales, Hotel Cleveland, Cleveland, Ohio.

THE AMERICAN LARYNGOLOGICAL, RHINOLOGICAL AND OTOLOGICAL SOCIETY, INC.

Dr. C. Stewart Nash, Secretary of The American Laryngological, Rhinological and Otological Society, Inc., has announced the following schedule of meetings for 1955.

MID-WINTER MEETINGS

Eastern Section Meeting, Friday, January 7, 1955
Philadelphia, Pa., Hotel Warwick

Triological Council Meeting, Saturday, January 8, 1955
New York City, The Waldorf-Astoria

Western Section Meeting, Saturday and Sunday, January 15 and 16, 1955
Los Angeles, Calif., The Town House

Southern Section Meeting, Saturday, January 22, 1955
Charlottesville, Va., Medical School Auditorium

Middle Section Meeting, Monday, January 24, 1955
Detroit, Mich., Sheraton-Cadillac Hotel

SPRING MEETINGS

American Board of Otolaryngology, Richmond, Va., March 6-10, 1955

All Society Meetings will be held at the Hollywood Beach Hotel, Hollywood, Florida.

American Laryngological Association, March 13, 14, 1955

Triological Society (mornings only), March 15, 16, 17, 1955

American Broncho-Esophagological Association (afternoons only), March 15, 16, 1955

American Otological Society, Inc., March 17, 18, 1955

For hotel reservations please communicate with Mr. John W. Tyler, Manager, Hollywood Beach Hotel, Hollywood, Florida.

SECTION ON OPHTHALMOLOGY, AMERICAN MEDICAL ASSOCIATION

The 1955 meeting of the Section on Ophthalmology will be held in Atlantic City, N. J., June 6 to 10, 1955, simultaneously with that of the Association for Research in Ophthalmology.

Anyone wishing to present a paper before the Section is urged to communicate with Dr. Harold G. Scheie, 313 South 17th Street, Philadelphia 3, Pa., as soon as possible. A title and abstract, of not less than 30 nor more than 150 words, must be in his hands by January 1, 1955. Anyone wishing to present a paper before the Association for Research should contact Dr. Lorand V. Johnson, 10515 Carnegie Avenue, Cleveland 6, Ohio, as soon as possible.

Members are reminded that their contributions to the Knapp Fund are now due and payable to Dr. Parker Heath, 243 Charles Street, Boston, Mass. A $10.00 contribution entitles you to a volume of the 1954 Transactions. Contributions in excess of $10.00 are invited.

EYE RESEARCH FUND

The Board of Trustees and the Medical Director of the newly established Eye Research Fund held a meeting on September 17, 1954, at the St. Regis Hotel, New York, for the purpose of establishing a plan to study abnormalities of the eyes, with particular emphasis on the study of myopia and its complications. The Board of Trustees is comprised of Mrs. Helene C. Sprague of North Adams, Mass., and Messrs. Edwin A. Speakman of Westbury, Long Island, and M. Barry Carlton of Washington, D. C.

The principal purpose of the Eye Research Fund is to promote and assist in research with reference to the origin, cause, nature, methods of prevention and treatment of myopia and other conditions of the eye. Dr. Maurice W. Nugent of Los Angeles is the Medical Director of the Fund. The Medical Advisory Board includes other outstanding ophthalmologists: Dr. Conrad Berens, Professor of Clinical Ophthalmology at the New York University Post Graduate Medical School; Dr. Frederick C. Cordes, Professor of Ophthalmology at the University of California in San Francisco; Dr. P. J. Leinfelder, Professor of Ophthalmology at the State University of Iowa; and Dr. S. Rodman Irvine, Associate Clinical Professor of Ophthalmology and Chairman of Department of Ophthalmology at the University of California in Los Angeles.

CALIFORNIA

The Research Study Club of Los Angeles announces its Twenty-Fourth Annual Mid-Winter Clinical Convention in Ophthalmology and Otolaryngology, January 17 through January 28, 1955.

For the Ear, Nose and Throat program, the Guest Lecturers will include Dr. Theodore E. Walsh, Professor and Head of the Department of Otolaryngology, Washington University, St. Louis; and Dr. John J. Conley, Chief of the Head and Neck Service, St. Vincent's Hospital, New York City, and Clinical Professor of Otorhinolaryngology, New York University. Also serving on the program with didactic lectures will be Drs. Kenneth C. Brandenburg of Long Beach, J. C. Almy Harding of San Diego, and Paul J. Moses of San Francisco. Instruction Courses in Otolaryngology will be provided by Drs. E. R. V. Anderson, Norman Jesberg, Harold Owens and Manuel R. Wexler, all of Los Angeles, and Leo Shahinian of San Francisco.

The Guest Lecturers for the eye program will be Dr. Edmund B. Spaeth and Dr. Irving H. Leopold, both from the University of Pennsylvania Graduate School of Ophthalmology. Instruction Courses in Ophthalmology will be given by Mrs. Helenor Campbell Wilder Foerster and Dr. Robert H. Shaffer, both of San Francisco.

The first week will be devoted to the Ear, Nose and Throat—from Monday to Saturday, January 17 through January 22. The Eye week will cover Monday to Friday, January 24 through January 28.

The American Laryngological, Rhinological and Otological Society, Western Section, will hold its Annual Meeting at The Town House immediately preceding this Convention, Saturday and Sunday, January 15 and 16. On Saturday afternoon the scientific session is open to members and all interested otolaryngologists. Saturday evening there will be a dinner meeting for members of the Triologic Society only. Sunday morning, the second scientific session is open to all interested.

For more complete information, write to The Research Study Club of Los Angeles, 1930 Wilshire Boulevard, Suite 1411, Los Angeles 57, California.

Noise in relation to industrial exposure will be given a thorough study at the First West Coast Noise Symposium to be held December 2 and 3 at the Institute of Aeronautical Sciences, 7660 Beverly Blvd., Los Angeles.

Coordinated by the Greater Los Angeles Safety Council, the Symposium will cover every phase of the subject, including physics, physiology, clinical considerations, legal and industrial relations features, control measures and processes which may be used to control or reduce noise at the source.

The Symposium, which is being sponsored by five national associations and a number of local and regional organizations, is the first attempt on the West Coast to give complete coverage on a subject which has previously been detailed only in national meetings. Four general sessions will be presented at the two-day meeting. Delegates are urged to attend all four sessions in order to receive the full benefit of the conference.

For information write to J. G. Hussey, General Radio Co., 1000 North Seward, Los Angeles 28, California.

WASHINGTON, D. C.

A short postgraduate course in ophthalmology will be held at Walter Reed Army Medical Center on February 2, 3 and 4, 1955. The following civilian guest lecturers are supplemented by military ophthalmologists on the program: Professor Marc Amsler of Zurich, Switzerland; Doctors J. S. Friedenwald, W. F. Hughes, Jr., P. C. Kronfeld and L. E. Zimmerman.

The meeting is open to military and civilian ophthalmologists with no fee. Applications for military personnel should be processed through channels in accordance with SGO Circular No. 43, dated 18 May 1954. Civilians who wish to attend should apply to the Commanding General, Walter Reed Army Medical Center, Washington 12, D. C. Attention: Colonel J. H. King, Jr., Course Director in Ophthalmology.

FLORIDA

The Ninth Annual University of Florida Midwinter Seminar in Ophthalmology and Otolaryngology will be held in January, 1955, convening January 17 and continuing through January 22. As in previous years, Miami Beach will be the host city.

The lectures on Ophthalmology will be presented on January 17, 18 and 19, by Dr. William F. Hughes, Jr., Chicago; Dr. Phillips Thygeson, San Jose, Calif.; Dr. James Allen, New Orleans; Dr. Walter H. Fink, Minneapolis; and Dr. Milton L. Berliner, New York.

Outstanding Otolaryngologists who will lecture on January 20, 21 and 22 are Dr. Paul Holinger, Chicago; Dr. Lawrence R. Boles, Minneapolis; Dr. Edmund P. Fowler, Jr., New York; Dr. Arthur W. Proetz, St. Louis; and Dr. David D. DeWeese, Portland, Oregon.

On Wednesday afternoon, January 19, The Florida Society of Ophthalmology and Otolaryngology cordially invites all registrants to its Midwinter Convention, which meets concurrently with the Seminar.

For further information write to Walter T. Hotchkiss, M.D., 541 Lincoln Road, Miami Beach, Florida.

GEORGIA

The Georgia Society of Ophthalmology and Otolaryngology will hold its annual meeting on March 11 and 12, 1955, at the General Oglethorpe Hotel, Savannah, Ga.

The speakers will be Dr. Francis H. Adler, Philadelphia; Dr. J. W. McCall, Cleveland; Dr. J. A. Hilger, St. Paul; Dr. Walter H. Fink, Minneapolis; Dr. James H. Allen, New Orleans, and Dr. P. E. Ireland, Toronto, Ontario.

PENNSYLVANIA

The Fifth Annual Mid-Winter Clinical Meeting of the Pennsylvania Academy of Ophthalmology and Otolaryngology will be held at the Eye and Ear Hospital in Pittsburgh, Pennsylvania, on Wednesday, January 19, 1955. This one-day meeting will consist of operative clinics and symposia.

The annual meeting of the Pennsylvania Academy will be held in the Hotel Traymore, Atlantic City, New Jersey, May 18 to 21, 1955.

TORONTO

The Faculty of Medicine of the University of Toronto offers a combined refresher course in Eye, Ear, Nose and Throat Surgery from April 11 to 15, 1955. The instruction will consist of didactic lectures and surgical demonstrations emphasizing the office practice of ophthalmology and otolaryngology.

The guest surgeons will be Dr. Alson E. Braley, Professor of Ophthalmology, University of Iowa, Iowa City; Dr. Frank B. Walsh, Associate Professor of Ophthalmology, Johns Hopkins Hospital, Baltimore; Dr. Edmund P. Fowler, Jr., Professor of Otolaryngology, Columbia University College of Physicians and Surgeons, New York; and Dr. Dean M. Lierle,

Professor of Otolaryngology and Maxillofacial Surgery, University of Iowa, Iowa City.

The staff of the Departments of Ophthalmology and Otolaryngology in the University will contribute to the course. The course will be held for a minimum of 10 and a maximum of 30 students. The fee will be $100.00 payable to the Chief Accountant, Simcoe Hall, University of Toronto. Applications should be made to the Dean of the Faculty of Medicine not later than February 15, 1955.

ALL-INDIA OPHTHALMOLOGIC SOCIETY

The All-India Ophthalmologic Society will hold its annual meeting from February 16 to 19, 1955, in Bombay, India.

On behalf of Dr. S. N. Cooper, Secretary of the Society, a cordial invitation is extended to United States ophthalmologists and their families to attend the meeting and to take part in the scientific phase of this conference. There will be a symposium for the 1955 conference on "Diseases of the Lacrimal Apparatus." However, papers on other ophthalmologic subjects may also be read.

The Ansett Travel Service, 323 Geary Street, San Francisco, is organizing a tour to this conference. The tour will originate in San Francisco, take six weeks and will include stopovers in Honolulu, Tokyo, Hong Kong, Bangkok, the Taj Mahal, New Delhi, Bombay, Cairo, Rome and New York.

The all inclusive costs including first class air transportation, meals, hotels, and excursions will be $2,800.00 per person.

ARGENTINA

According to the decisions of the International Society of Audiology, with headquarters in Paris, the First Extraordinary Congress of this famous institution, under the patronage of the Argentine Government, will be held in Buenos Aires, November 26-30, 1954.

This important scientific gathering, held outside France for the first time, will be honored with the presence of prominent international scientists specially invited from the United States, France, Belgium, Switzerland, Holland, Britain, Germany, Brazil, Chile and Paraguay. It has also been supported by all the universities of the country and by well-known local and foreign centers of learning.

Dr. Aldo G. Remorino is chairman of the Executive Committee of the Congress.

ENGLAND

The Bowman Lecture, which is presented at the meeting of the Ophthalmological Society of the United Kingdom, will be given by Dr. John H. Dunnington, Director of the Institute of Ophthalmology, Presbyterian Hospital, New York, in London, England, on April 28, 1955.

POSITIONS AVAILABLE

Fellowship in Allergy and Otolaryngology for a period of three months with a stipend of $200.00 per month. For further information, write to French K. Hansel, M.D., 1229 Missouri Theatre Building, 634 N. Grand Boulevard, St. Louis 3, Mo.

Ophthalmologist: Diplomate of Board wanted for association with established ophthalmologist in San Diego, Calif. Write Box 6273, Point Loma Station, San Diego, Calif.

Listings of positions available should be sent to W. L. Benedict, M.D., 100 First Avenue Building, Rochester, Minn., by the fifth of the month preceding publication. They should include (1) type of physician wanted (ophthalmologist or otolaryngologist; diplomate, resident, etc.); (2) type of position to be filled; and (3) whom to write for further information. Unless otherwise requested, listings will be published once only.

The Academy will handle no further correspondence beyond the listing and assume no responsibility. Neither does it endorse nor guarantee any of the published listings.

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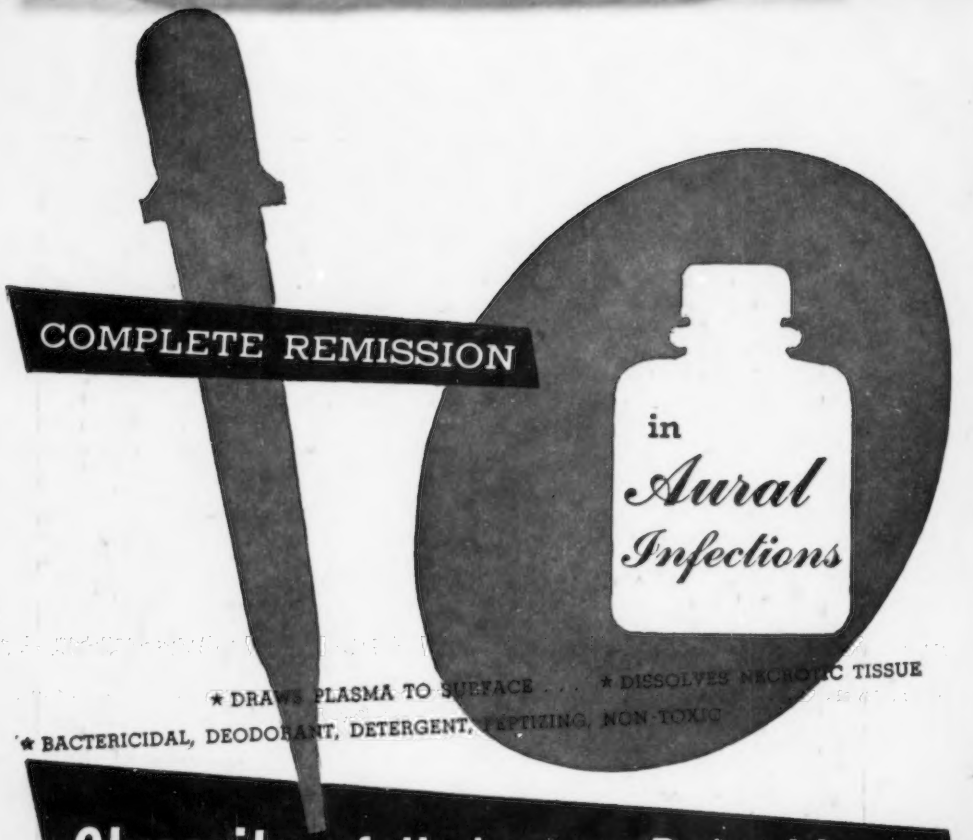

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Arch. Otolaryngol., 43:605, 1946.
E., E., N., & T. Mo., 26:27, 1947.
Laryngoscope, 56:556, 1946.
New Eng. J. Med., 234:468, 1946.
Annals of Allergy, 4:33, 1946.
J. A. Ph., A., (Sc. Ed.) 35:304, 1946.

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